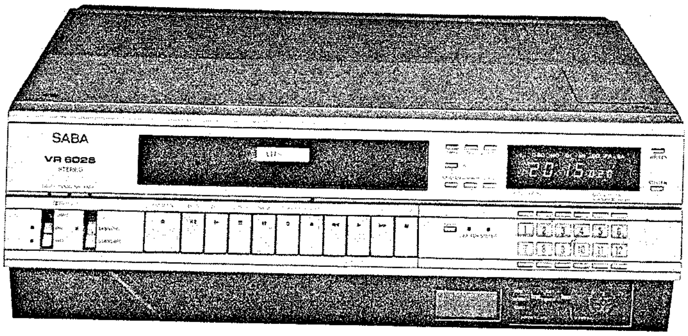
SABA Service-Schaltbilder · Circuit diagrams

AV 024

ULTRACOLOR Video-Recorder 6028 VHS PAL
ULTRACOLOR Video-Recorder 6028 CT VHS PAL

VR 6028
VR 6028 CT



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Schaltungsbeschreibung
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Circuit description
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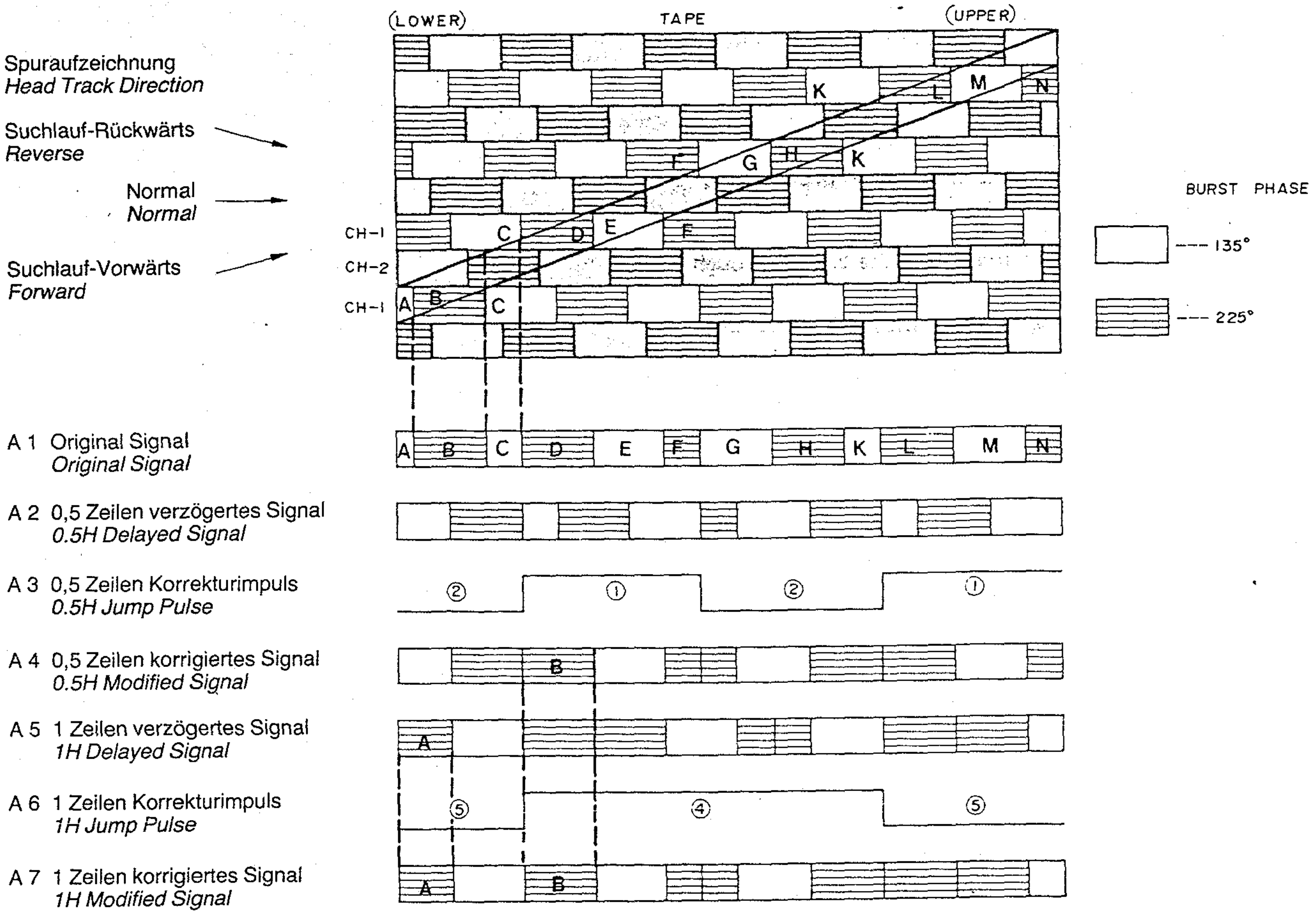

(LOWER)
TAPE
(UPPER)
Spuraufzeichnung
Head Track Direction
Suchlauf-Rückwärts
Reverse
Normal
Normal
Suchlauf-Vorwärts
Forward
CH-1
CH-2
CH-1
A B C D E F G H K L M N
BURST PHASE
--- 135°
--- 225°
A 1 Original Signal
Original Signal
A 2 0,5 Zeilen verzögertes Signal
0.5H Delayed Signal
A 3 0,5 Zeilen Korrekturimpuls
0.5H Jump Pulse
② ① ② ①
A 4 0,5 Zeilen korrigiertes Signal
0.5H Modified Signal
A 5 1 Zeilen verzögertes Signal
1H Delayed Signal
A 6 1 Zeilen Korrekturimpuls
1H Jump Pulse
⑤ ④ ⑤
A 7 1 Zeilen korrigiertes Signal
1H Modified Signal

Abb./ ***Fig. 3-4***

Gehäuse- und Platinendemontage

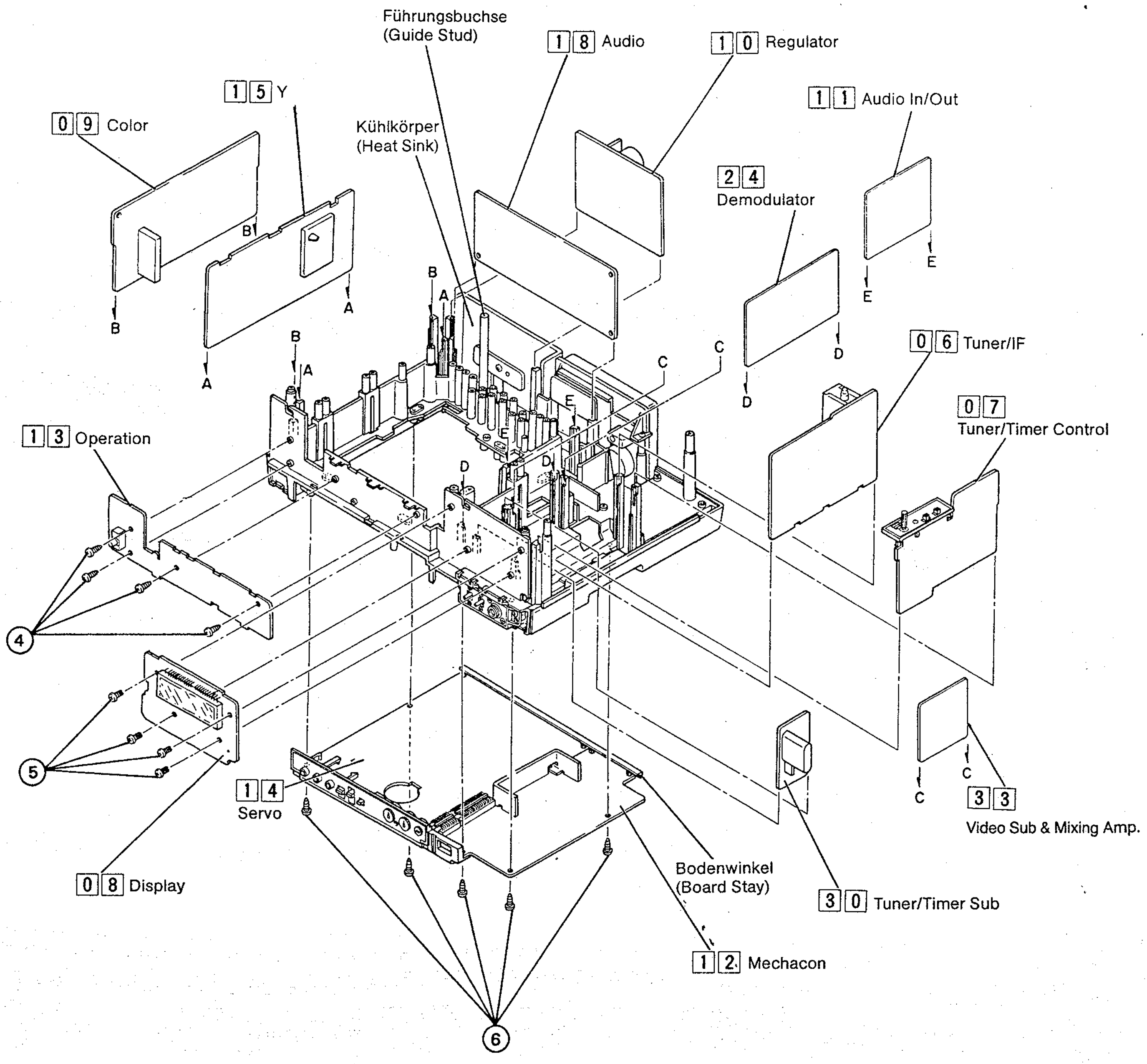
Ausbau der Leiterplatten

1. Funktionstastenplatte
   Ausbau durch Lösen der vier Schrauben (4).
2. Anzeigeplatte
   Ausbau durch Lösen der vier Schrauben (5).
3. Servo- und Mechaniksteuerplatte
   Ausbau durch Lösen der fünf Schrauben (6). Platte vom Chassis abkippen.
4. Die übrigen Platten können durch einfaches Herausziehen aus den Chassisführungen nach oben entnommen werden. Dies betrifft die Platten: Color, Y, Regelnetzteil, Audio, Demodulator Audio, Audio Eingang/Ausgang, Video & Mischer, Tuner/ZF, Tuner-, Timersteuerung.
5. Kühlplatte
   Die Kühlplatte kann zum Ausbau nach oben von dem Führungsbolzen abgezogen werden.

Dismantling

Circuit board assemblies

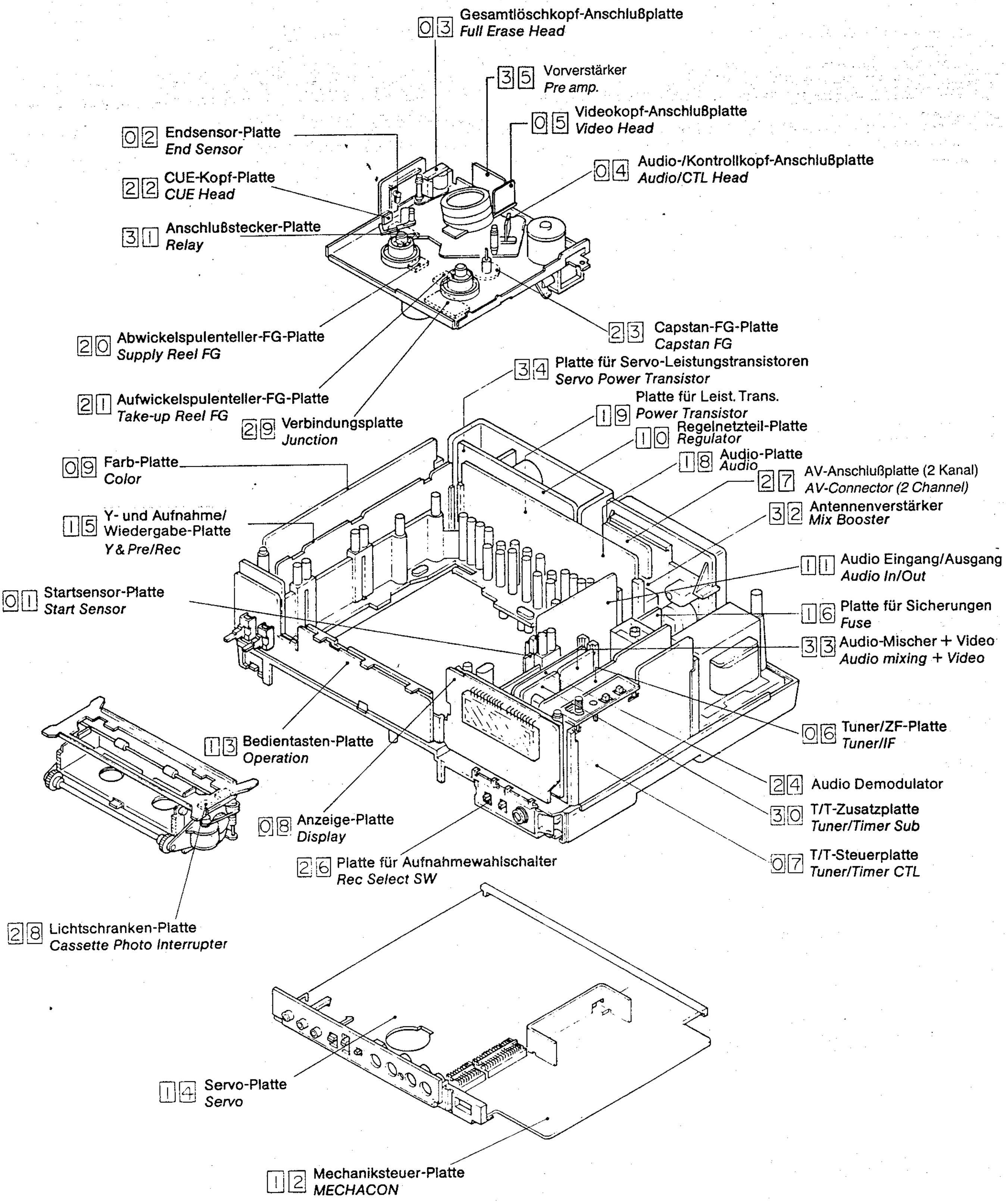
1. Operation board assembly
   Take out four screws (4) and remove the operation board assembly.
2. Display board assembly
   Take out four screws (5) and remove the display board assembly.
3. Servo and Mechacon board assemblies
   Take out five screws (6) and remove the board stay from the chassis assembly.
4. Other board assemblies
   Remove the Color, Y, Regulator, Audio, Demodulator Audio, Audio in/out, Video Sub & Mixing Amp., Tuner/IF, Tuner Timer Control, and Tuner/Timer Sub board assemblies by pulling them upard from the chassis assembly board guides.
5. Heat sink
   The heat sink, with power transistor and servo power transistor boards, can be removed by pulling it upward from the guide stud of the chassis assembly.



Führungsbuchse
(Guide Stud)
18 Audio
10 Regulator
15 Y
11 Audio In/Out
09 Color
Kühlkörper
(Heat Sink)
24
Demodulator
06 Tuner/IF
07
Tuner/Timer Control
13 Operation
A
B
C
D
E
4
5
14
Servo
08 Display
33
Video Sub & Mixing Amp.
Bodenwinkel
(Board Stay)
30 Tuner/Timer Sub
12 Mechacon
6

Abb. Lage der Leiterplatten
Fig. Circuit boards

Schaltbild-Teil · Circuit diagrams
Lage der Leiterplatten · Circuit board location


03 Gesamtlöschkopf-Anschlußplatte *Full Erase Head*
35 Vorverstärker *Pre amp.*
05 Videokopf-Anschlußplatte *Video Head*
02 Endsensor-Platte *End Sensor*
04 Audio-/Kontrollkopf-Anschlußplatte *Audio/CTL Head*
22 CUE-Kopf-Platte *CUE Head*
31 Anschlußstecker-Platte *Relay*
20 Abwickelspulenteller-FG-Platte *Supply Reel FG*
23 Capstan-FG-Platte *Capstan FG*
34 Platte für Servo-Leistungstransistoren *Servo Power Transistor*
21 Aufwickelspulenteller-FG-Platte *Take-up Reel FG*
19 Platte für Leist. Trans. *Power Transistor*
29 Verbindungsplatte *Junction*
10 Regelnetzteil-Platte *Regulator*
18 Audio-Platte *Audio*
09 Farb-Platte *Color*
27 AV-Anschlußplatte (2 Kanal) *AV-Connector (2 Channel)*
32 Antennenverstärker *Mix Booster*
15 Y- und Aufnahme/ Wiedergabe-Platte *Y & Pre/Rec*
11 Audio Eingang/Ausgang *Audio In/Out*
01 Startsensor-Platte *Start Sensor*
16 Platte für Sicherungen *Fuse*
33 Audio-Mischer + Video *Audio mixing + Video*
06 Tuner/ZF-Platte *Tuner/IF*
13 Bedientasten-Platte *Operation*
24 Audio Demodulator
30 T/T-Zusatzplatte *Tuner/Timer Sub*
08 Anzeige-Platte *Display*
07 T/T-Steuerplatte *Tuner/Timer CTL*
26 Platte für Aufnahmewahlschalter *Rec Select SW*
28 Lichtschranken-Platte *Cassette Photo Interrupter*
14 Servo-Platte *Servo*
12 Mechaniksteuer-Platte *MECHACON*

NC	nicht angeschlossen	Non Connection
NON-LIN	nicht linear	Non-Linear
OP	Betrieb	Operation
ORN	Orange	Orange
OSC	Oszillator	Oscillator
PB	Wiedergabe	Playback
PI	Lichtschranke	Photo Interrupter
PR	Gummiandruckrolle	Pinch Roller
P/S	Pause/Standbild	Pause/Still
P. TR	Leistungstransistor	Power Transistor
PU	Abtasten, Abfragen	Pick-up
PWB	Leiterplatte	Printed Wiring Board
REC	Aufnahme	Recording (Record)
RED	Rot	Red
REG	Regelung	Regulator
REV	entgegengesetzt	Reverse
REW	Rücklauf	Rewind
RF	Hochfrequenz	Radio Frequency
R/P	Aufnahme/Wiedergabe	Record/Playback
RT	rotierender Transformator	Rotary Transformer
RUN IND	Bandlaufanzeige	Running Indicator
RY	Relais	Relay
SAFE	Sicherheit	Safety
SEAR	Suchen	Search
SEC	Sekunde	Second
SEL	Auswahl	Select
SENS	Sensor	Sensor
SF	Sourcefolger	Source Follower
SOL	Magnet	Solenoid
S. R	Abwickelspulenteller	Supply Reel
S. SENS	Start-Sensor	Start Sensor
S. SEP	Synchronsignal-Abtrennstufe	Sync Separator
SP	Normal-Betrieb	Standard Play
SW	Schalter	Switch
T. E ALM	Alarm bei Bandende	Tape End Alarm
TP	Testpunkt	Test Point
TR	Transistor	Transistor
TRANS	Transformator	Transformer
T. REC	Schaltuhr-Aufnahme	Timer Record
T. SW	Schaltuhr-Schalter	Timer Switch
T/T	Tuner/Schaltuhr	Tuner/Timer
TU	Aufwickeln	Take-up
TU. R	Aufwickelspulenteller	Take-up Reel
UL	Entladen, ausgefädelt	Unloading
V	Volt	Volt
VCO	Spannungsgesteuerter Oszillator	Voltage Controlled Oscillator
VLT	Violett	Violet
V. HOLD	Vertikal-Synchronisation	Vertical Hold
V. PULSE	Vertikalimpuls	Vertical Pulse
V. SEL	Videosignal Anwahl	Video Select
V/T	Video/Fernsehen	Video/Television
V/U	VHF/UHF	VHF/UHF
VXO	Steuerbarer Quarzoszillator	Variable Crystal Oscillator
W	Watt	Watt
W/D	Weiß/Schwarz	White and Dark
WHT	Weiß	White
Y	Helligkeitssignal (Y)	Luminance
YLW	Gelb	Yellow

Die in dieser Instruction verwendeten Farben haben, falls nicht anders gekennzeichnet, folgende Bedeutung:
The colors used in printing this manual, where not otherwise indicated, signify as follows:

Farbe/Color	Schaltbild/Schematic diagrams	Gedruckte Platten/Circuit board
▨ Grau schattiert Gray shading	Sicherheitsbauteile nur gegen Original-Ersatzteile auswechseln! Replace safety components only with original spare parts!	
▨ Rot/Red	AC und DC Spannungen/AC and DC voltages Test- und Abgleich-Punkte Test and adjustment – point location	AC und DC Spannungen/AC and DC voltages Abgleichbenennung und Bauteil-Positionszahl Adjustment part symbol numbers and names
Rot schattiert Red shading	Ungeschaltete Versorgungsspannungen Always (unswitched) power supply lines Geschaltete Versorgungsspannungen Switched power supply lines	
■ Blau/blue	Technische Informationen, Testpunkte und Schaltungsbezeichnungen. Technical informations, test points and circuit names.	
▨ Blau schattiert Blue shading	Haupt- und Neben-Signalwege Main and sub signal lines	
Grün schattiert Green shading		Schaltungsplatten Leitungsbahnen Circuit board patterns

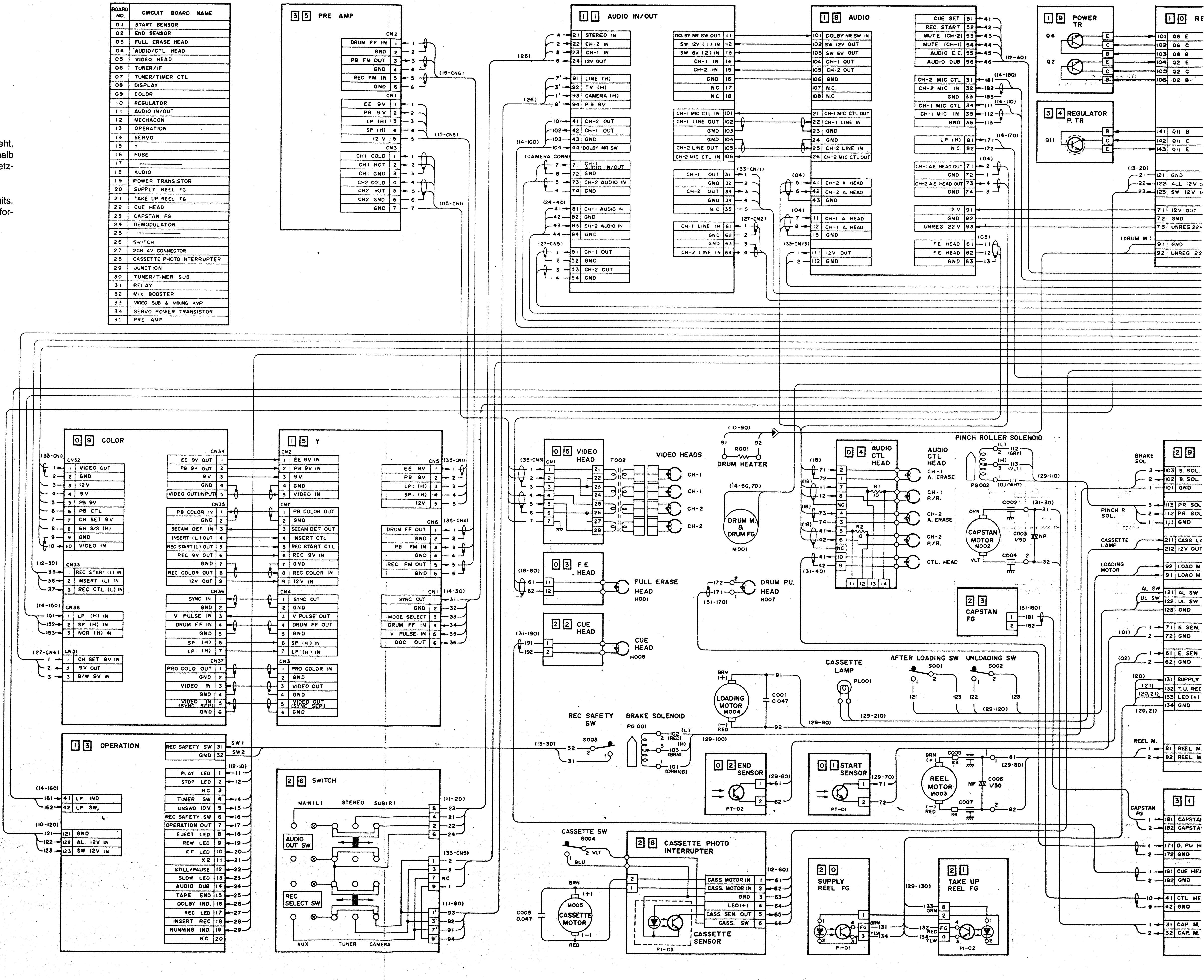
Übersetzungen wichtiger Abkürzungen und Ausdrücke
Key to abbreviations

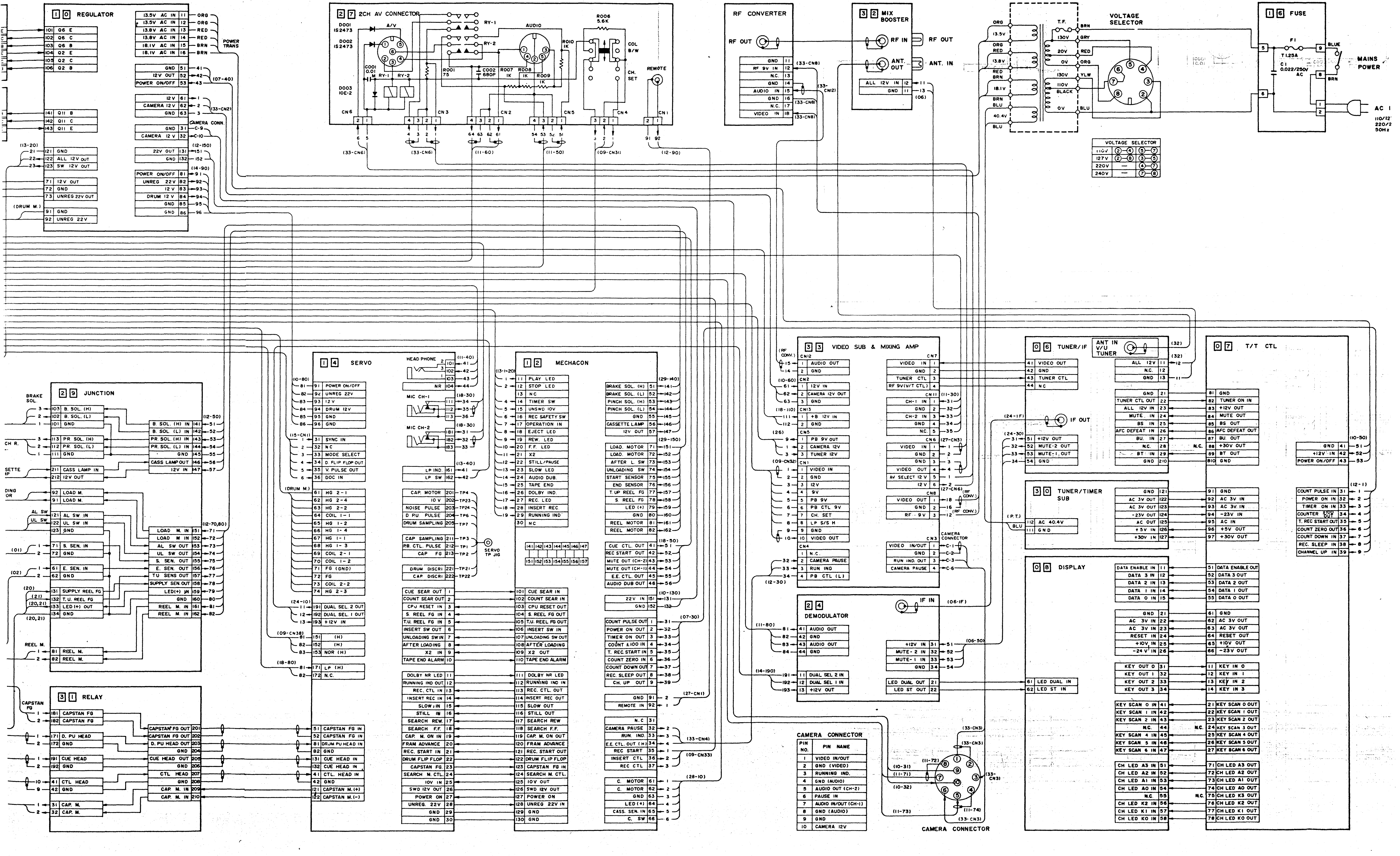
AC	Wechselstrom, Wechselspannung	Alternating Current
ACC	Automatische Farbregelung	Automatic Color Control
A/CTL	Audio/Kontrollkopf	Audio/Control
A. DUB	Nachvertonung	Audio Dubbing
AE	Audio-Löschkopf	Audio Erase
AFC	Automatische Frequenzsteuerung	Automatic Frequency Control
AGC	Automatische Verstärkungsregelung	Automatic Gain Control
AL	Nach Einfädeln	After Loading
ALL	Immer, ständig	Always
AMP	Verstärker	Amplifier
ANT	Antenne	Antenna
APC	Automatische Phasensteuerung	Automatic Phase Control
AR	Nach Aufnahme	After Recording
AUX	Reserveeingang	Auxiliary
B	Basis	Base
BAL	Symmetrie	Balance
BLK	Schwarz	Black
BLU	Blau	Blue
BPF	Bandpaßfilter	Band-Pass Filter
BRN	Braun	Brown
B. SOL	Bremsmagnet	Brake Solenoid
B/W	Schwarz/Weiß	Black and White
CAP	Bandantrieb	Capstan
CARR	Träger	Carrier
CASS	Cassette	Cassette
CD	Abwärtszählen	Count Down
CF	Keramikfilter	Ceramic Filter
CH	Kanal	Channel
COL	Farbe	Color (Colour)
COMP	Vergleichsstufe	Comparator
CONN	Steckverbinder	Connector
CONV	Umsetzer	Converter
COUNT SEA	Memory-Suchlauf	Counter Search
C. PAUSE	Kamera-Pause	Camera Pause
C. SW	Cassettenschalter	Cassette Switch
CTL	Steuerung	Control
DAC	Digital-Analog-Wandler	Digital to Analog Converter
DEMOD	Demodulator	Demodulator
DET	Auswerter	Detector
DL	Verzögerungsleitung	Delay Line
DOC	Drop-out Kompensator	Drop Out Compensator
D. PU	Abtaster für Kopftrommel-Magnet	Drum Pick-up
DRUM FF	Kopftrommel Flip-Flop	Drum Flip-Flop
EF	Emitterfolger	Emitter Follower
EMPHA	Emphasis	Emphasis
EQ	Entzerrer	Equalizer
E. SENS	Endsensor	End Sensor
E. SW	Elektronischer Schalter	Electronic Switch
F	Sicherung	Fuse
F. ADV	Einzelbildbetrieb	Frame Advance
FE	Gesamtlöschkopf	Full Erase
FF	Schneller Vorlauf	Fast Forward
	Flip-Flop	Flip-Flop
FG	Frequenz-Generator	Frequency Generator
FM	Frequenzmodulation	Frequency Modulation
FR	Gesamtneuaufnahme	Full Recording
FWD	Vorwärts	Forward
GEN	Generator	Generator
GND	Masse	Ground
GRN	Grün	Green
GRY	Grau	Gray
HG	Hall-Generator	Hall-Generator
HPF	Hochpaßfilter	High-Pass Filter
ID	Ident-Impuls	Identification
IF	Zwischenfrequenz	Intermediate Frequency
IND	Anzeige	Indicator
INV	Inverter	Inverter
L	Low-Pegel	Low
LED	Leuchtdiode	Light Emitting Diode
LOAD	Einfädeln	Loading
LP	Langspiel-Betrieb	Long Play
LPF	Tiefpaßfilter	Low-Pass Filter
M.	Motor	Motor
MDA	Motorverstärker	Motor Drive Amplifier
MECHACON	Mechaniksteuerung	Mechanism Control
MIC	Mikrofon	Microphone
MIX	Mischer	Mixer, Mixing
MMV	Monomultivibrator	Monostable Multivibrator
MOD	Modulator	Modulator
MUTE	Stummabstimmung	Muting

Gesamtverdrahtungsplan · Overall wiring diagram

Wichtiger Hinweis:
Auch wenn der Betriebsschalter auf der Gerätevorderseite auf „Aus" steht, liegen Versorgungsgleichspannungen an den Schaltungen an. Deshalb muß vor der Reparatur oder dem Auswechseln von Teilen der Hauptnetzschalter ausgeschaltet werden.
Important:
Even with the Sub-power switch off, DC voltage is supplied to the circuits. Therefore, set the rear panel MAINS POWER switch to off before performing service or replacing parts.

BOARD NO.	CIRCUIT BOARD NAME
01	START SENSOR
02	END SENSOR
03	FULL ERASE HEAD
04	AUDIO/CTL HEAD
05	VIDEO HEAD
06	TUNER/IF
07	TUNER/TIMER CTL
08	DISPLAY
09	COLOR
10	REGULATOR
11	AUDIO IN/OUT
12	MECHACON
13	OPERATION
14	SERVO
15	Y
16	FUSE
17	————
18	AUDIO
19	POWER TRANSISTOR
20	SUPPLY REEL FG
21	TAKE UP REEL FG
22	CUE HEAD
23	CAPSTAN FG
24	DEMODULATOR
25	————
26	SWITCH
27	2CH AV CONNECTOR
28	CASSETTE PHOTO INTERRUPTER
29	JUNCTION
30	TUNER/TIMER SUB
31	RELAY
32	MIX BOOSTER
33	VIDEO SUB & MIXING AMP
34	SERVO POWER TRANSISTOR
35	PRE AMP

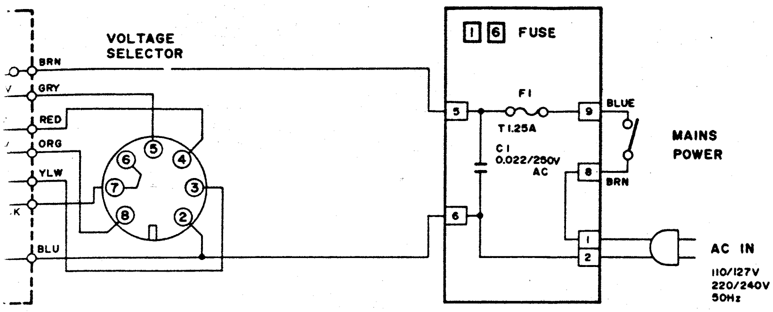

35 PRE AMP
11 AUDIO IN/OUT
18 AUDIO
19 POWER TR
34 REGULATOR P. TR
09 COLOR
15 Y
05 VIDEO HEAD
VIDEO HEADS
DRUM HEATER
DRUM M. & DRUM FG
04 AUDIO CTL HEAD
PINCH ROLLER SOLENOID
CAPSTAN MOTOR M002
03 F.E. HEAD
FULL ERASE HEAD H001
DRUM PU. HEAD H007
23 CAPSTAN FG
22 CUE HEAD
CUE HEAD H008
CASSETTE LAMP
AFTER LOADING SW
UNLOADING SW
LOADING MOTOR M004
REC SAFETY SW
BRAKE SOLENOID
13 OPERATION
26 SWITCH
02 END SENSOR
01 START SENSOR
REEL MOTOR M003
CASSETTE SW
28 CASSETTE PHOTO INTERRUPTER
CASSETTE MOTOR M005
CASSETTE SENSOR
20 SUPPLY REEL FG
21 TAKE UP REEL FG
29
31


10 REGULATOR
27 2CH AV CONNECTOR
RF CONVERTER
32 MIX BOOSTER
POWER TRANS
VOLTAGE SELECTOR
16 FUSE
MAINS POWER
AC
29 JUNCTION
14 SERVO
12 MECHACON
33 VIDEO SUB & MIXING AMP
06 TUNER/IF
07 T/T CTL
30 TUNER/TIMER SUB
08 DISPLAY
24 DEMODULATOR
31 RELAY
CAMERA CONNECTOR

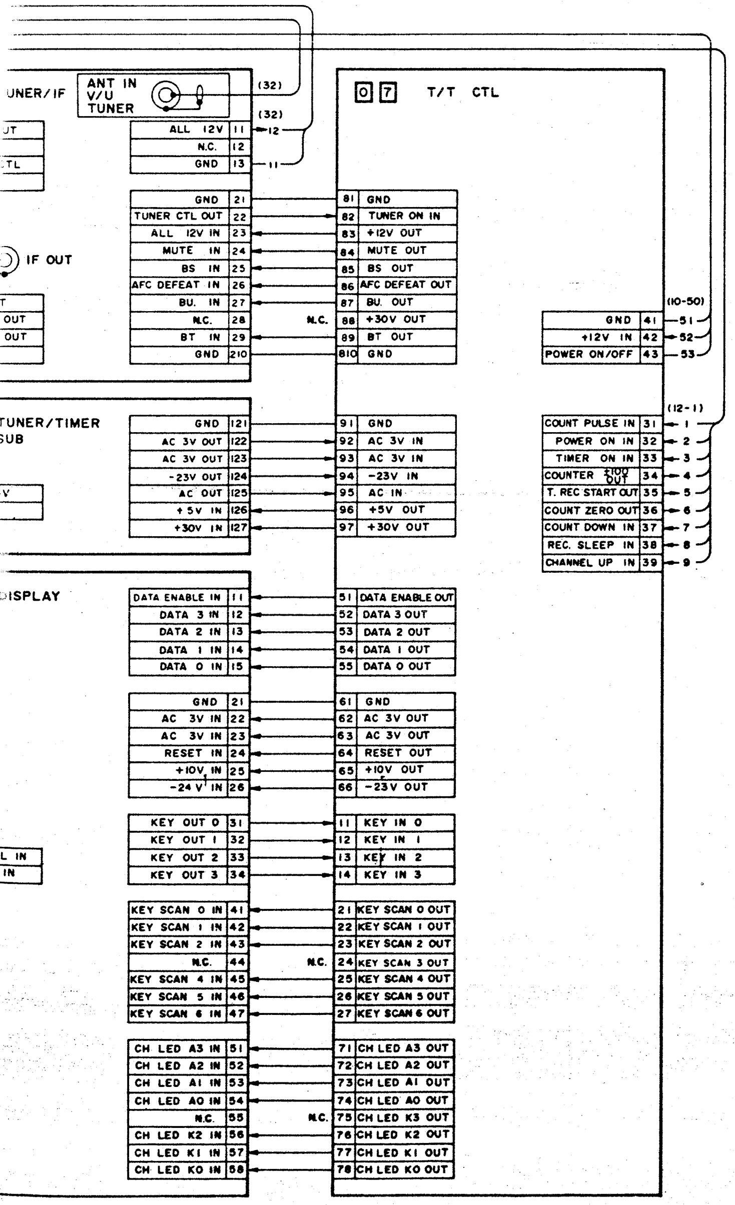
VOLTAGE SELECTOR		
110V	②—④	⑤—⑦
127V	②—⑧	③—⑤
220V	—	④—⑦
240V	—	⑦—⑧

CAMERA CONNECTOR

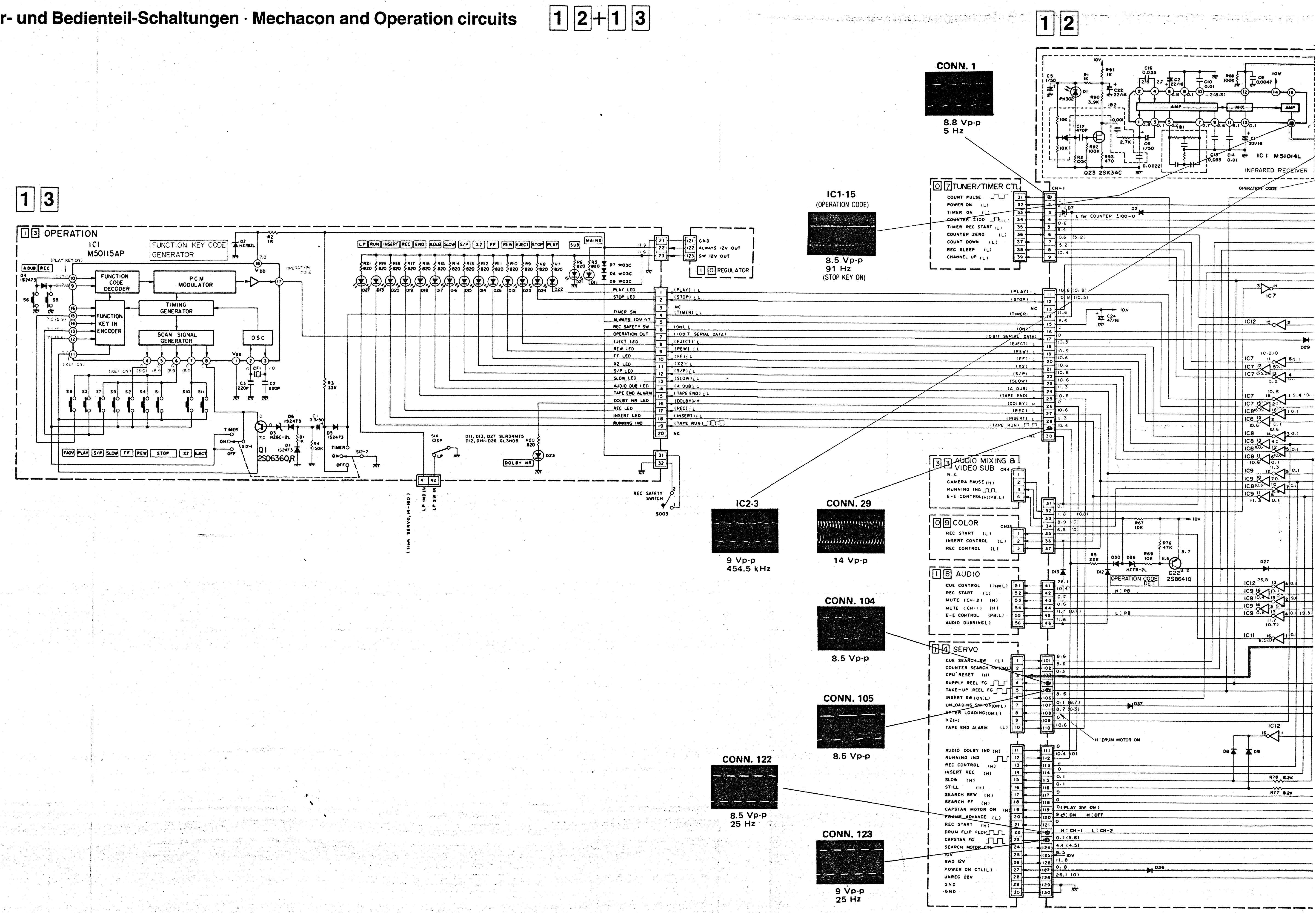
PIN NO.	PIN NAME
1	VIDEO IN/OUT
2	GND (VIDEO)
3	RUNNING IND.
4	GND (AUDIO)
5	AUDIO OUT (CH-2)
6	PAUSE IN
7	AUDIO IN/OUT (CH-1)
8	GND (AUDIO)
9	GND
10	CAMERA 12V

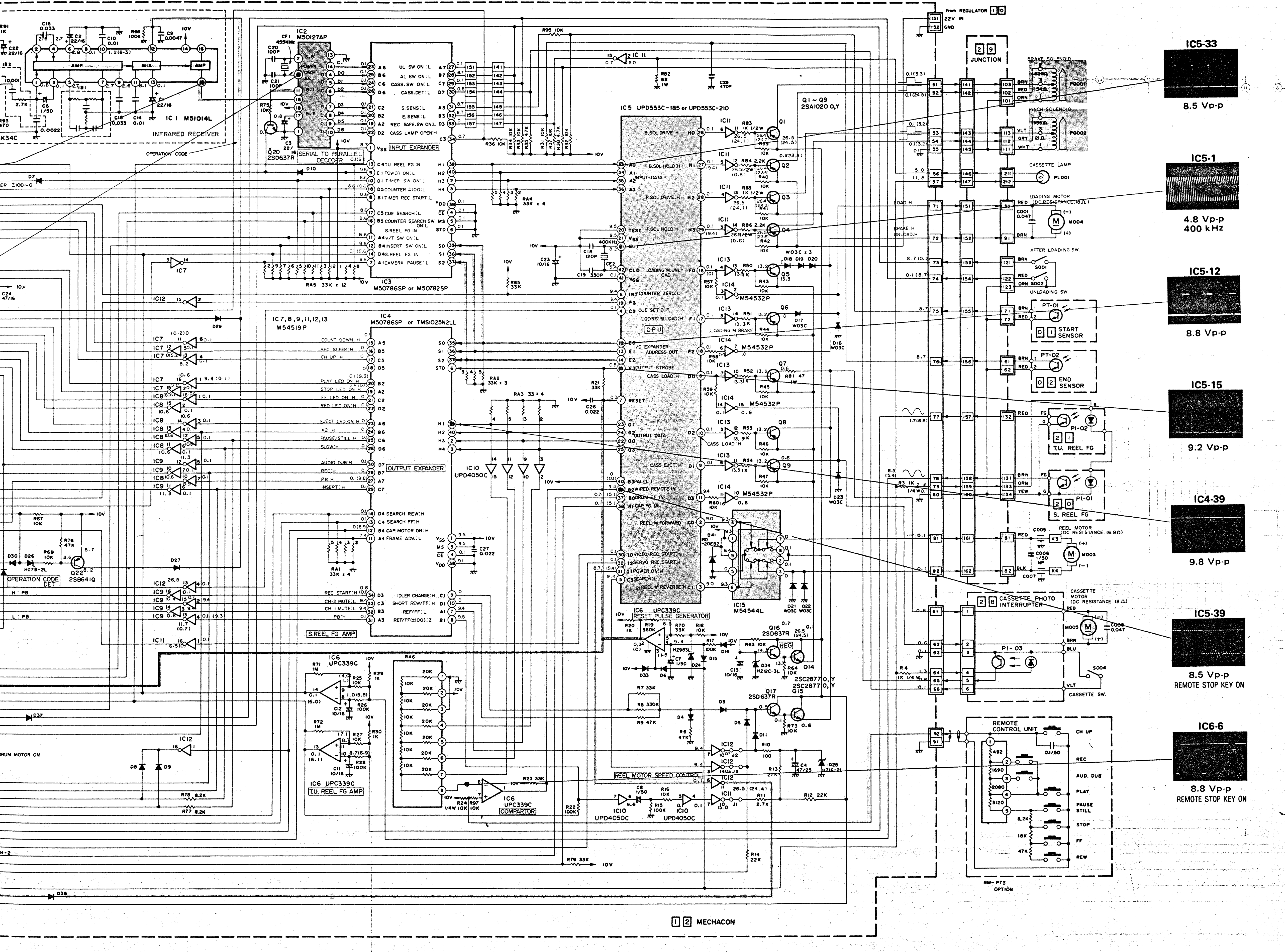

VOLTAGE SELECTOR
BRN
GRY
RED
ORG
YLW
BLU
16 FUSE
F1
T1.25A
C1
0.022/250V AC
5
6
9
8
1
2
BLUE
BRN
MAINS POWER
AC IN
110/127V
220/240V
50Hz

VOLTAGE SELECTOR		
110V	②—④	⑤—⑦
127V	②—⑧	③—⑤
220V	—	④—⑦
240V	—	⑦—⑧


UNER/IF
ANT IN V/U TUNER
(32)
ALL 12V 11
N.C. 12
GND 13
IF OUT
GND 21
TUNER CTL OUT 22
ALL 12V IN 23
MUTE IN 24
BS IN 25
AFC DEFEAT IN 26
BU. IN 27
N.C. 28
BT IN 29
GND 210
07 T/T CTL
81 GND
82 TUNER ON IN
83 +12V OUT
84 MUTE OUT
85 BS OUT
86 AFC DEFEAT OUT
87 BU. OUT
88 +30V OUT
89 BT OUT
810 GND
N.C.
(10-50)
GND 41 51
+12V IN 42 52
POWER ON/OFF 43 53
(12-1)
COUNT PULSE IN 31 1
POWER ON IN 32 2
TIMER ON IN 33 3
COUNTER +100 OUT 34 4
T. REC START OUT 35 5
COUNT ZERO OUT 36 6
COUNT DOWN IN 37 7
REC. SLEEP IN 38 8
CHANNEL UP IN 39 9
TUNER/TIMER SUB
GND 121
AC 3V OUT 122
AC 3V OUT 123
-23V OUT 124
AC OUT 125
+5V IN 126
+30V IN 127
91 GND
92 AC 3V IN
93 AC 3V IN
94 -23V IN
95 AC IN
96 +5V OUT
97 +30V OUT
DISPLAY
DATA ENABLE IN 11
DATA 3 IN 12
DATA 2 IN 13
DATA 1 IN 14
DATA 0 IN 15
51 DATA ENABLE OUT
52 DATA 3 OUT
53 DATA 2 OUT
54 DATA 1 OUT
55 DATA 0 OUT
GND 21
AC 3V IN 22
AC 3V IN 23
RESET IN 24
+10V IN 25
-24V IN 26
61 GND
62 AC 3V OUT
63 AC 3V OUT
64 RESET OUT
65 +10V OUT
66 -23V OUT
KEY OUT 0 31
KEY OUT 1 32
KEY OUT 2 33
KEY OUT 3 34
11 KEY IN 0
12 KEY IN 1
13 KEY IN 2
14 KEY IN 3
KEY SCAN 0 IN 41
KEY SCAN 1 IN 42
KEY SCAN 2 IN 43
N.C. 44
KEY SCAN 4 IN 45
KEY SCAN 5 IN 46
KEY SCAN 6 IN 47
21 KEY SCAN 0 OUT
22 KEY SCAN 1 OUT
23 KEY SCAN 2 OUT
24 KEY SCAN 3 OUT
25 KEY SCAN 4 OUT
26 KEY SCAN 5 OUT
27 KEY SCAN 6 OUT
CH LED A3 IN 51
CH LED A2 IN 52
CH LED A1 IN 53
CH LED A0 IN 54
N.C. 55
CH LED K2 IN 56
CH LED K1 IN 57
CH LED K0 IN 58
71 CH LED A3 OUT
72 CH LED A2 OUT
73 CH LED A1 OUT
74 CH LED A0 OUT
75 CH LED K3 OUT
76 CH LED K2 OUT
77 CH LED K1 OUT
78 CH LED K0 OUT

Mechaniksteuer- und Bedienteil-Schaltungen · Mechacon and Operation circuits 12+13


12
13
13 OPERATION
IC1 M50115AP
FUNCTION KEY CODE GENERATOR
FUNCTION CODE DECODER
PCM MODULATOR
TIMING GENERATOR
FUNCTION KEY IN ENCODER
SCAN SIGNAL GENERATOR
OSC
Q1 2SD636Q,R
FADV PLAY S/P SLOW FF REW STOP X2 EJECT
LP RUN INSERT REC END ADUB SLOW S/P X2 FF REW EJECT STOP PLAY SUB MAINS
10 REGULATOR
GND
ALWAYS 12V OUT
SW 12V OUT
DOLBY NR
REC SAFETY SWITCH S003
(from SERVO, 14-160)
LP IND IN
LP SW IN
CONN. 1
8.8 Vp-p
5 Hz
IC1-15
(OPERATION CODE)
8.5 Vp-p
91 Hz
(STOP KEY ON)
IC2-3
9 Vp-p
454.5 kHz
CONN. 29
14 Vp-p
CONN. 104
8.5 Vp-p
CONN. 105
8.5 Vp-p
CONN. 122
8.5 Vp-p
25 Hz
CONN. 123
9 Vp-p
25 Hz
07 TUNER/TIMER CTL
33 AUDIO MIXING & VIDEO SUB
09 COLOR
18 AUDIO
14 SERVO
IC1 M51014L
INFRARED RECEIVER
Q23 2SK34C
OPERATION CODE DET
Q22 2SB641Q
H: DRUM MOTOR ON


IC1 M51014L
INFRARED RECEIVER
OPERATION CODE
IC2 M50127AP
SERIAL TO PARALLEL DECODER
Q20 2SD637R
IC3 M50786SP or M50782SP
INPUT EXPANDER
IC4 M50786SP or TMS1025N2LL
OUTPUT EXPANDER
IC7,8,9,11,12,13 M54519P
IC5 UPD553C-185 or UPD553C-210
CPU
IC10 UPD4050C
IC11
IC13
IC14 M54532P
IC15 M54544L
Q1 ~ Q9 2SA1020 O,Y
IC6 UPC339C RESET PULSE GENERATOR
IC6 UPC339C T.U. REEL FG AMP
IC6 UPC339C COMPARTOR
REEL MOTOR SPEED CONTROL
S.REEL FG AMP
OPERATION CODE DET
Q22 2SB641Q
Q16 2SD637R
Q17 2SD637R
Q14 2SC2877 O,Y
Q15 2SC2877 O,Y
REG
from REGULATOR 1 0
22V IN
GND
2 9 JUNCTION
BRAKE SOLENOID
PG001
PINCH SOLENOID
PG002
CASSETTE LAMP
PL001
LOADING MOTOR (DC RESISTANCE:18Ω)
M004
AFTER LOADING SW.
S001
S002
UNLOADING SW.
PT-01
0 1 START SENSOR
PT-02
0 2 END SENSOR
PI-02
2 1 T.U. REEL FG
PI-01
2 0 S. REEL FG
REEL MOTOR (DC RESISTANCE:16.9Ω)
M003
2 8 CASSETTE PHOTO INTERRUPTER
CASSETTE MOTOR (DC RESISTANCE:18Ω)
M005
PI-03
S004
CASSETTE SW.
REMOTE CONTROL UNIT
CH UP
REC
AUD. DUB
PLAY
PAUSE STILL
STOP
FF
REW
RM-P73 OPTION
1 2 MECHACON
IC5-33
8.5 Vp-p
IC5-1
4.8 Vp-p
400 kHz
IC5-12
8.8 Vp-p
IC5-15
9.2 Vp-p
IC4-39
9.8 Vp-p
IC5-39
8.5 Vp-p
REMOTE STOP KEY ON
IC6-6
8.8 Vp-p
REMOTE STOP KEY ON

Wenn nicht anders gekennzeichnet, beziehen sich die Signalformen auf Aufnahme- oder E-E-Betrieb.

When not specified, waveform is recording or E-E moc

▨ Sicherheitsbauteile nur gegen Original-Ersatzteile aus

Replace safety components only with original spare pa

Alle Gleichspannungen sind mit einem Digitalvoltmete Play gemessen bei Aufnahme, () bei Wiedergabe.

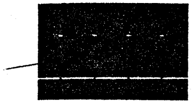
All DC voltages are measured with a digital voltmeter du at record mode, () at playback.

NOTE: Unless otherwise specified;

1. Diode are 1S2473.
2. All resistance values are in ohms,
3. All capacitance values are in μF.
    - ; Electrolytic
    - ; Ceramic
4. IC7–9, 11–13 ; M54519P
   IC14 ; M54532P
   ; C-MOS (Open collecter)
5. IC10 ; UPD4050C
   ; C-MOS (Buffer converter)

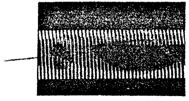
Shaded (▨) parts are critical for saf
Replace only with specified part num

IC5-33



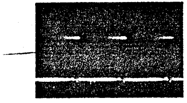
8.5 Vp-p

IC5-1



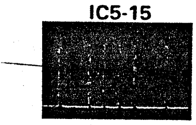
4.8 Vp-p
400 kHz

IC5-12



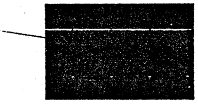
8.8 Vp-p

IC5-15



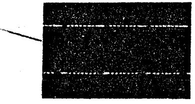
9.2 Vp-p

IC4-39



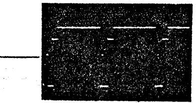
9.8 Vp-p

IC5-39



8.5 Vp-p
REMOTE STOP KEY ON

IC6-6



8.8 Vp-p
REMOTE STOP KEY ON

Wenn nicht anders gekennzeichnet, beziehen sich die angegebenen Signalformen auf Aufnahme- oder E-E-Betrieb.

When not specified, waveform is recording or E-E mode.

▨ Sicherheitsbauteile nur gegen Original-Ersatzteile auswechseln!

Replace safety components only with original spare parts!

Alle Gleichspannungen sind mit einem Digitalvoltmeter während Standard Play gemessen bei Aufnahme, () bei Wiedergabe.

All DC voltages are measured with a digital voltmeter during Standard Play at record mode, () at playback.

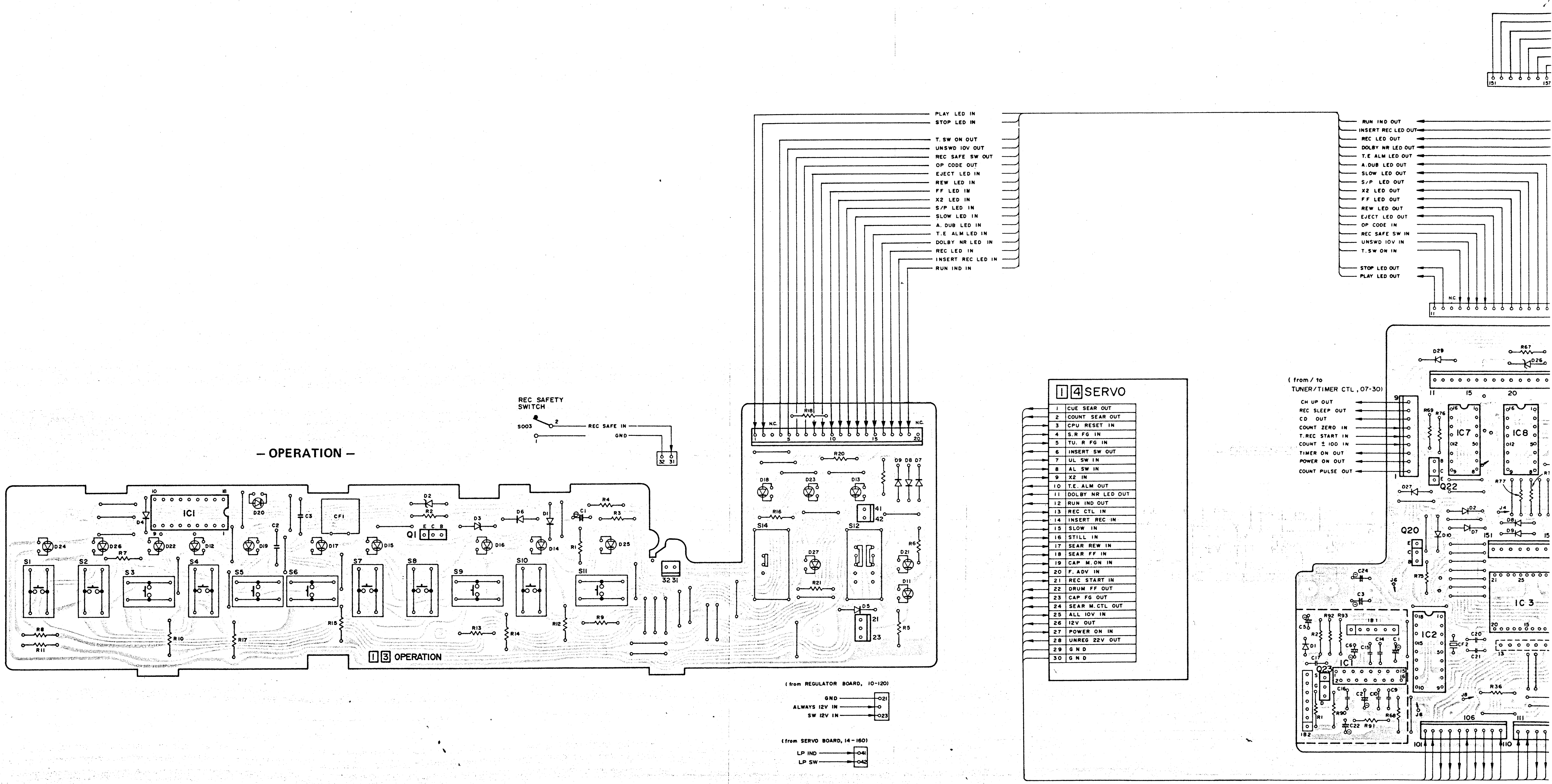
NOTE: Unless otherwise specified;

1. Diode are 1S2473.
2. All resistance values are in ohms, 1/8W.
3. All capacitance values are in μF.
   ±⊣⊢— ; Electrolytic
   —⊣⊢— ; Ceramic
4. IC7–9, 11–13 ; M54519P
   IC14 ; M54532P
   —▷∘—; C-MOS (Open collecter)
5. IC10 ; UPD4050C
   —▷—; C-MOS (Buffer converter)

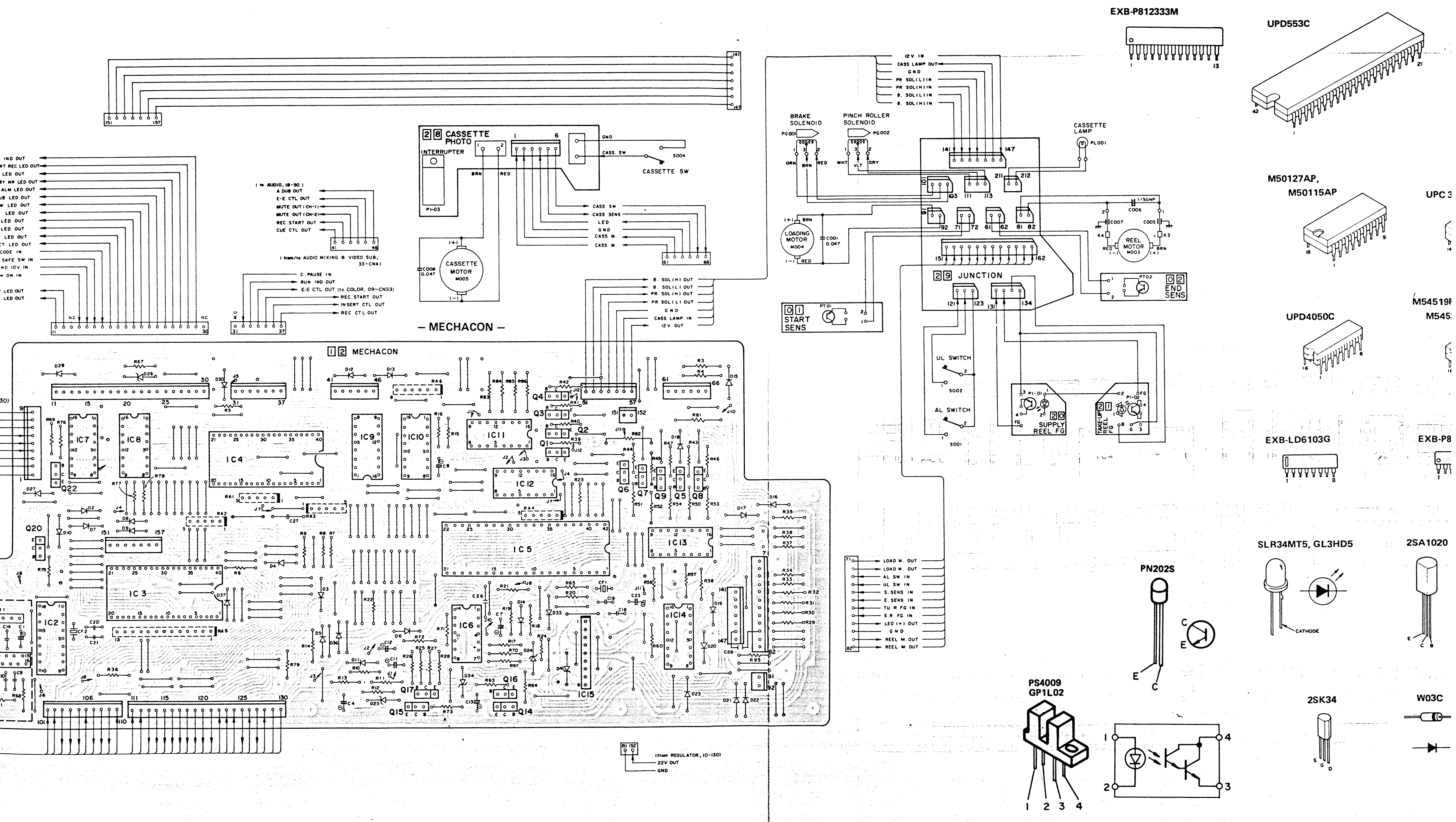
Shaded (▨) parts are critical for safety.
Replace only with specified part numbers.

Bedientastenplatte · Operation circuit board 1 3

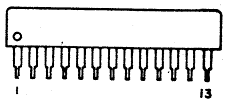
Mec


PLAY LED IN
STOP LED IN
T. SW ON OUT
UNSWD 10V OUT
REC SAFE SW OUT
OP CODE OUT
EJECT LED IN
REW LED IN
FF LED IN
X2 LED IN
S/P LED IN
SLOW LED IN
A. DUB LED IN
T.E ALM LED IN
DOLBY NR LED IN
REC LED IN
INSERT REC LED IN
RUN IND IN
RUN IND OUT
INSERT REC LED OUT
REC LED OUT
DOLBY NR LED OUT
T.E ALM LED OUT
A.DUB LED OUT
SLOW LED OUT
S/P LED OUT
X2 LED OUT
FF LED OUT
REW LED OUT
EJECT LED OUT
OP CODE IN
REC SAFE SW IN
UNSWD 10V IN
T.SW ON IN
STOP LED OUT
PLAY LED OUT
REC SAFETY SWITCH
S003
REC SAFE IN
GND
- OPERATION -
1 3 OPERATION
IC1
CF1
Q1
E C B
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S14
D1
D2
D3
D4
D5
D6
D7
D8
D9
D11
D12
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
D25
D26
D27
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
C1
C2
C3
N.C.
32 31
41
42
21
23
(from REGULATOR BOARD, 10-120)
GND
ALWAYS 12V IN
SW 12V IN
(from SERVO BOARD, 14-160)
LP IND
LP SW
1 4 SERVO
1 CUE SEAR OUT
2 COUNT SEAR OUT
3 CPU RESET IN
4 S.R FG IN
5 TU. R FG IN
6 INSERT SW OUT
7 UL SW IN
8 AL SW IN
9 X2 IN
10 T.E. ALM OUT
11 DOLBY NR LED OUT
12 RUN IND OUT
13 REC CTL IN
14 INSERT REC IN
15 SLOW IN
16 STILL IN
17 SEAR REW IN
18 SEAR FF IN
19 CAP M. ON IN
20 F. ADV IN
21 REC START IN
22 DRUM FF OUT
23 CAP FG OUT
24 SEAR M. CTL OUT
25 ALL 10V IN
26 12V OUT
27 POWER ON IN
28 UNREG 22V OUT
29 GND
30 GND
(from / to TUNER/TIMER CTL, 07-30)
CH UP OUT
REC SLEEP OUT
C D OUT
COUNT ZERO IN
T. REC START IN
COUNT ± 100 IN
TIMER ON OUT
POWER ON OUT
COUNT PULSE OUT
IC7
IC8
IC 3
IC2
IC1
Q20
Q22
Q23
151
157
101
106
110
111
182
181

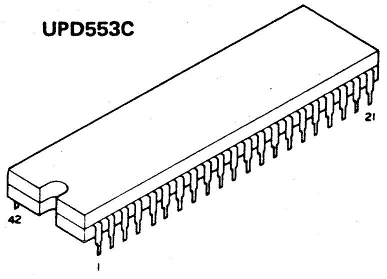
Mechanikersteuerplatte · Mechacon circuit board 1 2


2 8 CASSETTE PHOTO INTERRUPTER
P1-03
CASSETTE MOTOR M005
C006 0.047
CASSETTE SW
S004
CASS SW
CASS SENS
LED
GND
CASS M.
(to AUDIO, 18-50)
A DUB OUT
E-E CTL OUT
MUTE OUT (CH-1)
MUTE OUT (CH-2)
REC START OUT
CUE CTL OUT
(from/to AUDIO MIXING & VIDEO SUB, 33-CN4)
C. PAUSE IN
RUN IND OUT
E-E CTL OUT (to COLOR, 09-CN33)
REC START OUT
INSERT CTL OUT
REC CTL OUT
– MECHACON –
1 2 MECHACON
B. SOL(H) OUT
B. SOL(L) OUT
PR SOL(H) OUT
PR SOL(L) OUT
GND
CASS LAMP IN
12V OUT
12V IN
CASS LAMP OUT
PR SOL(L) IN
PR SOL(H) IN
B. SOL(L) IN
B. SOL(H) IN
BRAKE SOLENOID
PG001
PINCH ROLLER SOLENOID
PG002
ORN
BRN
RED
WHT
VLT
GRY
CASSETTE LAMP
PL001
LOADING MOTOR M004
C001 0.047
REEL MOTOR M003
C005
C006
C007
K3
K4
1/50NP
2 9 JUNCTION
0 1 START SENS
PT01
0 2 END SENS
PT02
UL SWITCH
S002
AL SWITCH
S001
2 0 SUPPLY REEL FG
P1-01
2 1 TAKE-UP REEL FG
P1-02
LOAD M. OUT
AL SW IN
UL SW IN
S.SENS IN
E.SENS IN
TU.R FG IN
S.R FG IN
LED (+) OUT
REEL M. OUT
(from REGULATOR, 10-130)
22V OUT
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
EXB-P812333M
UPD553C
M50127AP,
M50115AP
UPC3
UPD4050C
M54519
M545
EXB-LD6103G
EXB-P8
SLR34MT5, GL3HD5
CATHODE
2SA1020
PN202S
C
E
PS4009
GP1L02
1
2
3
4
2SK34
S
G
D
W03C

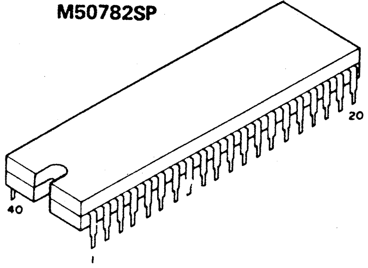
EXB-P812333M

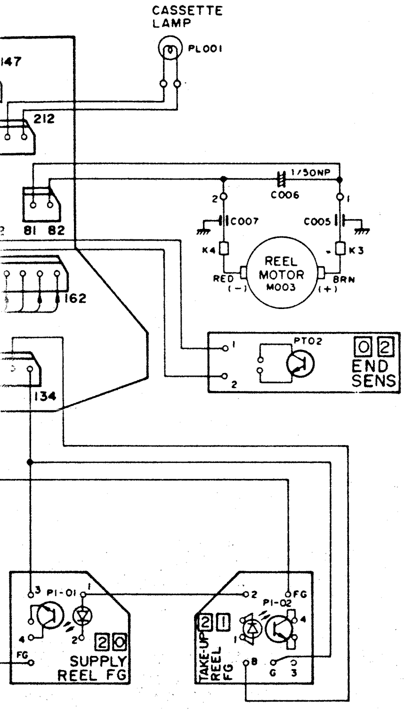


UPD553C

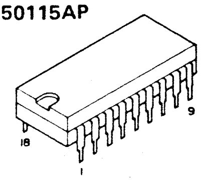


TMS1025N2LL
M50786SP
M50782SP

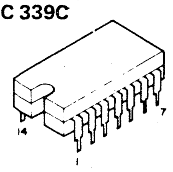



CASSETTE LAMP
PL001
147
212
1/50NP
C006
2
1
C007
C005
K4
K3
REEL MOTOR M003
RED (-)
BRN (+)
81 82
162
1
2
PT02
02
END SENS
134
3 P1-01
1
4
2
FG
20
SUPPLY REEL FG
2
FG
P1-02
21
1
4
TAKE-UP REEL FG
B
G
3

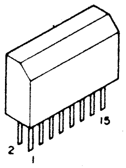
M50127AP,
M50115AP



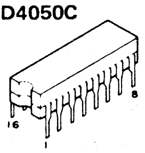
UPC 339C



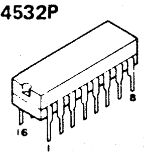
M51014L



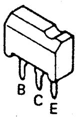
UPD4050C



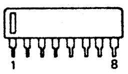
M54519P,
M54532P



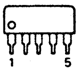
2SB641, 2SD637,
2SD636



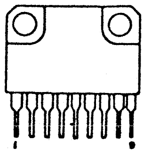
EXB-LD6103G



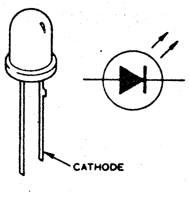
EXB-P84333M



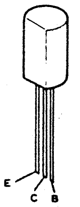
M54544L



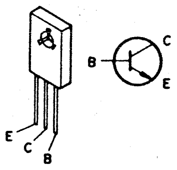
SLR34MT5, GL3HD5



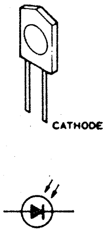
2SA1020



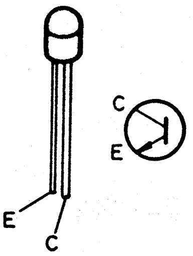
2SC2877



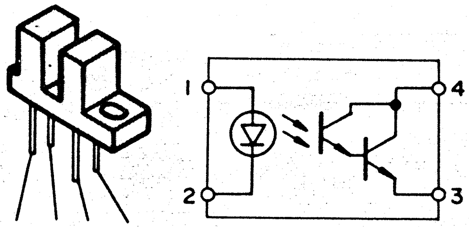
PH302



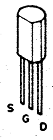
PN202S



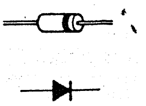
PS4009
GP1L02



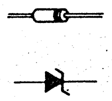
2SK34



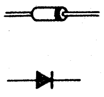
W03C

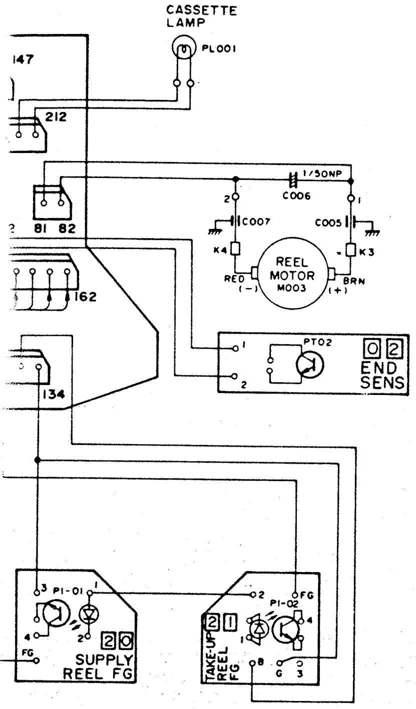


RD-20EB2
HZ SERIES

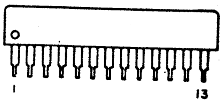


1S2473

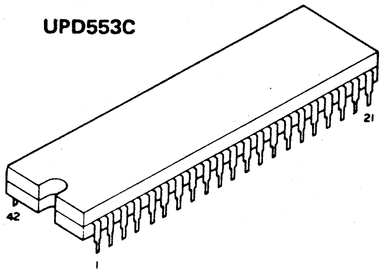



CASSETTE LAMP
PL001
147
212
1/50NP
C006
C007
C005
K4
K3
REEL MOTOR M003
RED (-)
BRN (+)
81 82
162
PT02
02
END SENS
134
P1-01
P1-02
20
SUPPLY REEL FG
21
TAKE-UP REEL FG
FG

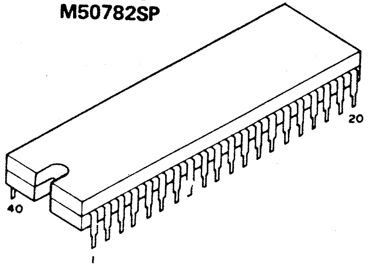
EXB-P812333M



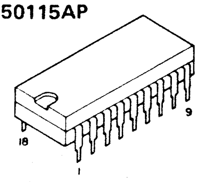
UPD553C



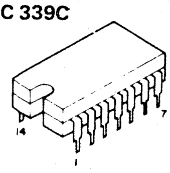
TMS1025N2LL
M50786SP
M50782SP



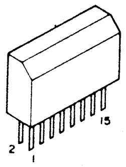
M50127AP,
M50115AP



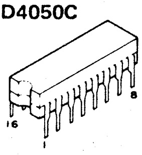
UPC 339C



M51014L



UPD4050C



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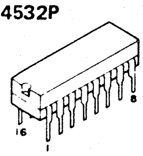
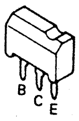
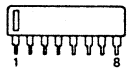
M54532P



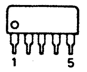
2SB641, 2SD637,
2SD636



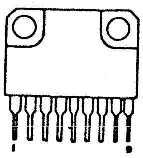
EXB-LD6103G



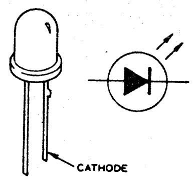
EXB-P84333M



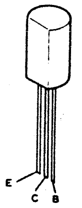
M54544L



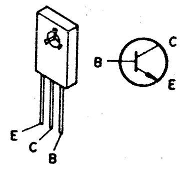
SLR34MT5, GL3HD5



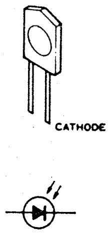
2SA1020



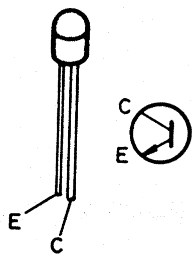
2SC2877



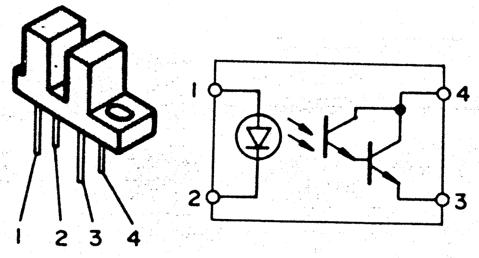
PH302



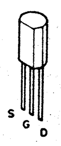
PN202S



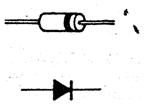
PS4009
GP1L02



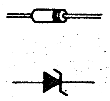
2SK34



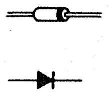
W03C



RD-20EB2
HZ SERIES

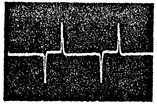


1S2473



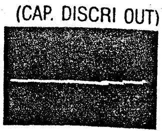
Servo-Schaltungen · Servo circuits 1 4

TP1
(P.B CTL. PULSE)



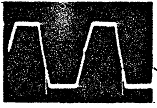
0.8 Vp-p

IC2-15
(CAP. DISCRI OUT)



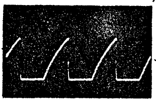
5.6 V (DC)

TP3
(CAP. SAMPLE)



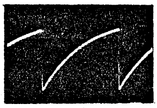
11.0 Vp-p

IC7-36
(PB CAP. TRAP. MMV)



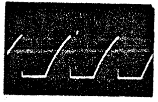
6.0 Vp-p

IC7-37
(PB TRACKING MMV)

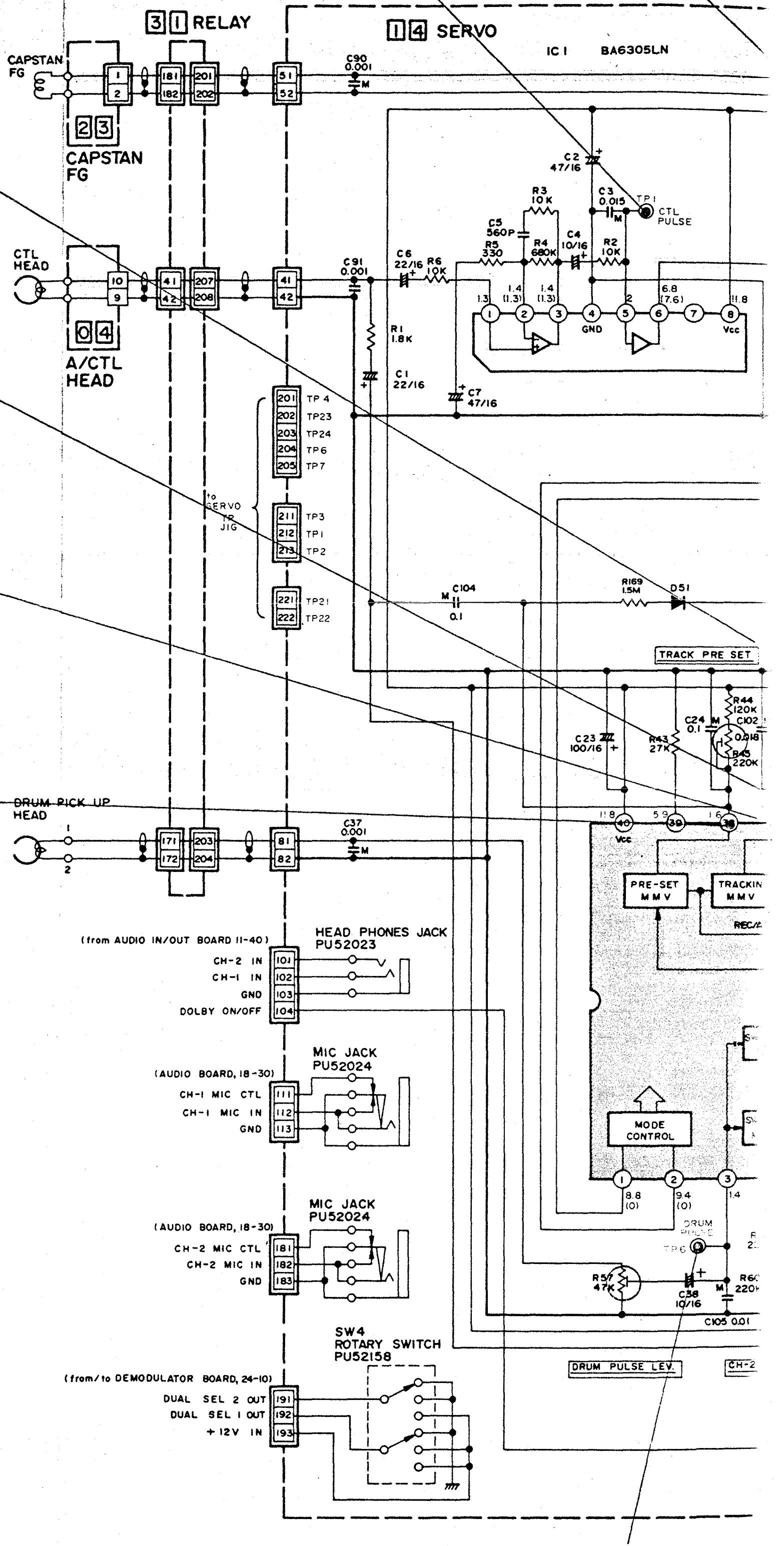


9.2 Vp-p

IC7-38
(P. RESET MMV)

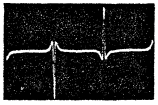


6.0 Vp-p

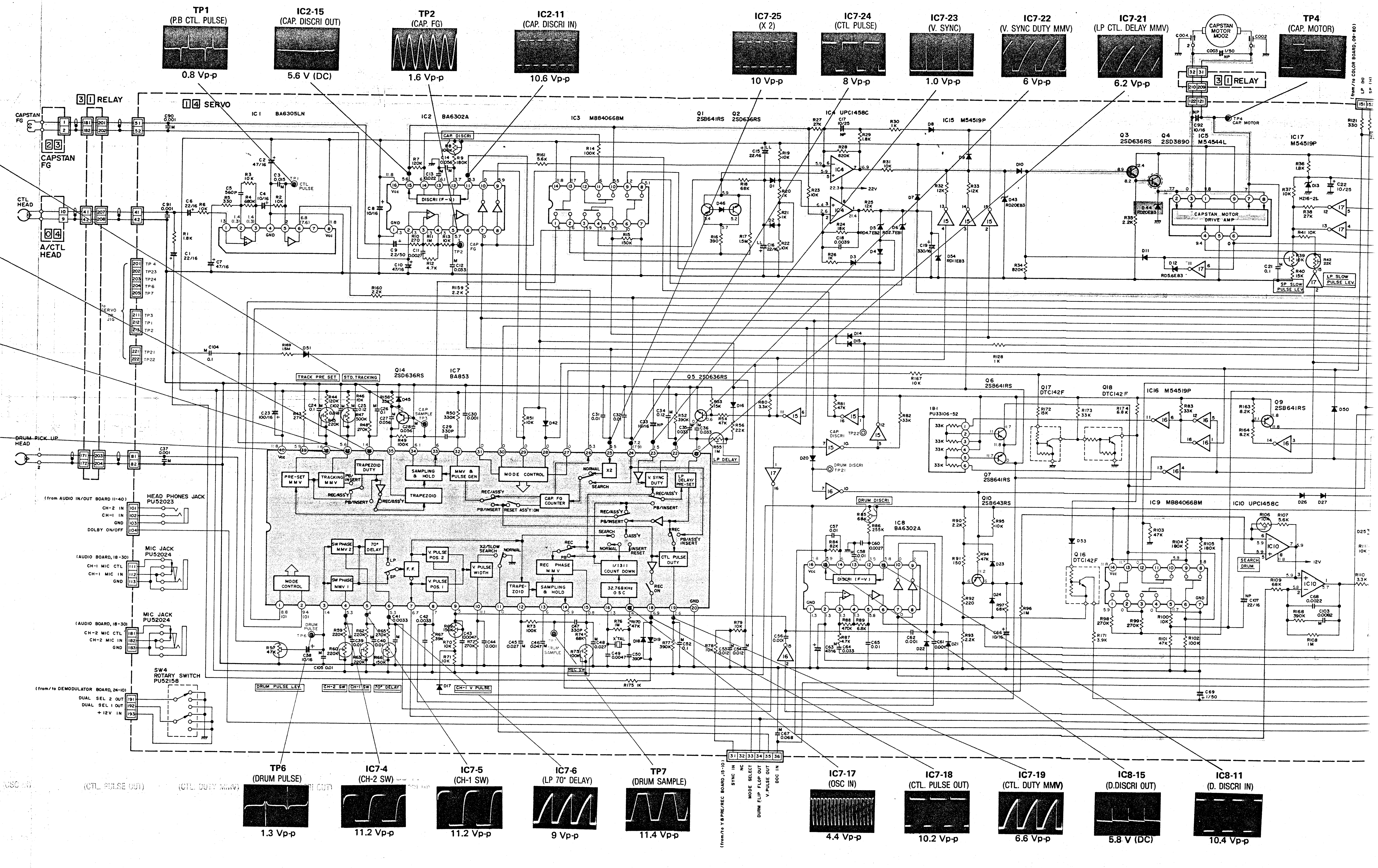


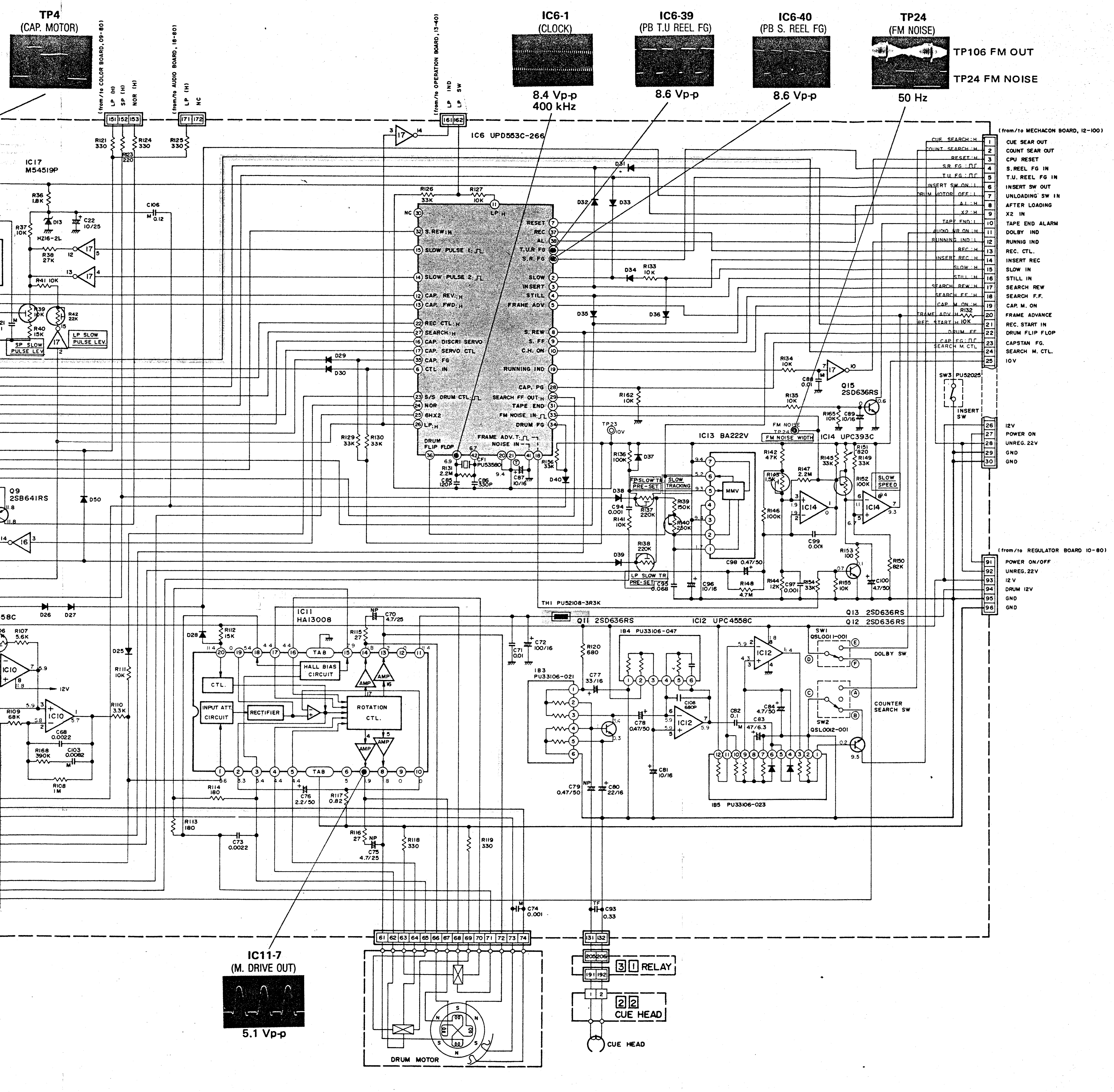
3 1 RELAY
1 4 SERVO
IC 1 BA6305LN
CAPSTAN FG
2 3 CAPSTAN FG
CTL HEAD
0 4 A/CTL HEAD
C90 0.001 M
C91 0.001
C2 47/16
C3 0.015 M
TP1 CTL PULSE
R3 10K
C5 560P
R5 330
R4 680K
C4 10/16
R2 10K
C6 22/16
R6 10K
R1 1.8K
C1 22/16
C7 47/16
GND
Vcc
TP 4
TP23
TP24
TP6
TP7
to SERVO TP JIG
TP3
TP1
TP2
TP21
TP22
C104 0.1 M
R169 1.5M
D51
TRACK PRE SET
R44 120K
C102
C24 0.1 M
C23 100/16
R43 27K
R45 220K
DRUM PICK UP HEAD
C37 0.001 M
Vcc
PRE-SET MMV
TRACKIN MMV
(from AUDIO IN/OUT BOARD 11-40)
HEAD PHONES JACK PU52023
CH-2 IN
CH-1 IN
GND
DOLBY ON/OFF
(AUDIO BOARD, 18-30)
MIC JACK PU52024
CH-1 MIC CTL
CH-1 MIC IN
GND
(AUDIO BOARD, 18-30)
MIC JACK PU52024
CH-2 MIC CTL
CH-2 MIC IN
GND
MODE CONTROL
DRUM PULSE TP6
R57 47K
C38 10/16
C105 0.01
DRUM PULSE LEV.
SW4 ROTARY SWITCH PU52158
(from/to DEMODULATOR BOARD, 24-10)
DUAL SEL 2 OUT
DUAL SEL 1 OUT
+12V IN

TP6
(DRUM PULSE)



1.3 Vp-p


TP1 (P.B CTL. PULSE) 0.8 Vp-p
IC2-15 (CAP. DISCRI OUT) 5.6 V (DC)
TP2 (CAP. FG) 1.6 Vp-p
IC2-11 (CAP. DISCRI IN) 10.6 Vp-p
IC7-25 (X 2) 10 Vp-p
IC7-24 (CTL PULSE) 8 Vp-p
IC7-23 (V. SYNC) 1.0 Vp-p
IC7-22 (V. SYNC DUTY MMV) 6 Vp-p
IC7-21 (LP CTL. DELAY MMV) 6.2 Vp-p
TP4 (CAP. MOTOR)
CAPSTAN MOTOR M002
31 RELAY
14 SERVO
CAPSTAN FG
23 CAPSTAN FG
CTL HEAD
04 A/CTL HEAD
DRUM PICK UP HEAD
IC1 BA6305LN
IC2 BA6302A
IC3 MB84066BM
Q1 2SB641RS
Q2 2SD636RS
IC4 UPC1458C
IC15 M54519P
Q3 2SD636RS
Q4 2SD3890
IC5 M54544L
CAPSTAN MOTOR DRIVE AMP
IC17 M54519P
CAP. DISCRI
DISCRI (F-V)
TO SERVO JIG
TP4 TP23 TP24 TP6 TP7 TP3 TP1 TP2 TP21 TP22
TRACK PRE SET
STD. TRACKING
Q14 2SD636RS
IC7 BA853
Q5 2SD636RS
Q6 2SB641RS
Q17 DTC142F
Q18 DTC142F
IC16 M54519P
Q9 2SB641RS
18-1 PU33106-52
Q7 2SB641RS
Q10 2SB643RS
Q16 DTC142F
IC9 MB84066BM
IC10 UPC1458C
DRUM DISCRI
IC8 BA6302A
PRE-SET MMV
TRACKING MMV
PB/INSERT
TRAPEZOID DUTY
SAMPLING & HOLD
MMV & PULSE GEN
MODE CONTROL
X2
NORMAL
SEARCH
V. SYNC DUTY
LP DELAY/PRE-SET
TRAPEZOID
REC/ASS'Y
CAP FG COUNTER
PB/INSERT RESET ASS'Y:ON
SW PHASE MMV 2
SW PHASE MMV 1
70° DELAY
F.F.
V. PULSE POS. 2
V. PULSE POS. 1
V. PULSE WIDTH
X2/SLOW SEARCH
REC PHASE MMV
TRAPEZOID
SAMPLING & HOLD
1/1311 COUNT DOWN
32.768KHz OSC
CTL PULSE DUTY
INSERT RESET
REC ON
LP DELAY
CAP DISCRI TP22
DRUM DISCRI TP21
SP SLOW PULSE LEV
LP SLOW PULSE LEV
SEARCH DRUM
DRUM PULSE LEV.
CH-2 SW
CH-1 SW
70° DELAY
CH-1 V PULSE
REC SW
(from AUDIO IN/OUT BOARD 11-40)
HEAD PHONES JACK PU52023
CH-2 IN 101
CH-1 IN 102
GND 103
DOLBY ON/OFF 104
(AUDIO BOARD, 18-30)
MIC JACK PU52024
CH-1 MIC CTL 111
CH-1 MIC IN 112
GND 113
(AUDIO BOARD, 18-30)
MIC JACK PU52024
CH-2 MIC CTL 181
CH-2 MIC IN 182
GND 183
(from/to DEMODULATOR BOARD, 24-10)
SW4 ROTARY SWITCH PU52158
DUAL SEL 2 OUT 191
DUAL SEL 1 OUT 192
+12V IN 193
(from/to COLOR BOARD, 09-80)
(from/to Y&PRE/REC BOARD, 15-10)
SYNC IN
NC
MODE SELECT
DURM FLIP FLOP OUT
V. PULSE OUT
DOC IN
TP6 (DRUM PULSE) 1.3 Vp-p
IC7-4 (CH-2 SW) 11.2 Vp-p
IC7-5 (CH-1 SW) 11.2 Vp-p
IC7-6 (LP 70° DELAY) 9 Vp-p
TP7 (DRUM SAMPLE) 11.4 Vp-p
IC7-17 (OSC IN) 4.4 Vp-p
IC7-18 (CTL. PULSE OUT) 10.2 Vp-p
IC7-19 (CTL. DUTY MMV) 6.6 Vp-p
IC8-15 (D.DISCRI OUT) 5.8 V (DC)
IC8-11 (D. DISCRI IN) 10.4 Vp-p


TP4
(CAP. MOTOR)
IC6-1
(CLOCK)
8.4 Vp-p
400 kHz
IC6-39
(PB T.U REEL FG)
8.6 Vp-p
IC6-40
(PB S. REEL FG)
8.6 Vp-p
TP24
(FM NOISE)
TP106 FM OUT
TP24 FM NOISE
50 Hz
IC6 UPD553C-266
IC17
M54519P
IC13 BA222V
IC14 UPC393C
Q15
2SD636RS
IC11
HA13008
Q11 2SD636RS
IC12 UPC4558C
Q13 2SD636RS
Q12 2SD636RS
Q9
2SB641RS
SW1
QSL001I-001
SW2
QSL0012-001
SW3 PU52025
DOLBY SW
COUNTER
SEARCH SW
INSERT SW
TH1 PU52108-3R3K
HALL BIAS CIRCUIT
ROTATION CTL.
INPUT ATT CIRCUIT
RECTIFIER
CTL.
MMV
FM NOISE WIDTH
SLOW SPEED
FP SLOW TR PRE-SET
SLOW TRACKING
LP SLOW TR PRE-SET
SP SLOW PULSE LEV
LP SLOW PULSE LEV
(from/to COLOR BOARD, 09-80)
(from/to AUDIO BOARD, 18-80)
(from/to OPERATION BOARD, 13-40)
(from/to MECHACON BOARD, 12-100)
CUE SEAR OUT
COUNT SEAR OUT
CPU RESET
S.REEL FG IN
T.U. REEL FG IN
INSERT SW OUT
UNLOADING SW IN
AFTER LOADING
X2 IN
TAPE END ALARM
DOLBY IND
RUNNIG IND
REC. CTL.
INSERT REC
SLOW IN
STILL IN
SEARCH REW
SEARCH F.F.
CAP. M. ON
FRAME ADVANCE
REC. START IN
DRUM FLIP FLOP
CAPSTAN FG.
SEARCH M. CTL.
10V
12V
POWER ON
UNREG. 22V
GND
GND
(from/to REGULATOR BOARD 10-80)
POWER ON/OFF
UNREG. 22V
12 V
DRUM 12V
GND
GND
IC11-7
(M. DRIVE OUT)
5.1 Vp-p
DRUM MOTOR
31 RELAY
22
CUE HEAD
CUE HEAD

NOTES: Unless otherwise specified;
1. All diodes are 1S2473 or MA150.
2. All resistance values are in ohms, 1/8 W.
3. All capacitance values are in μF.
 : Electrolytic
 : Mylar
 : Ceramic
4. All inductance values are in H.

Wenn nicht anders gekennzeichnet, beziehen sich die angegebenen Signalformen auf Aufnahme- oder E-E-Betrieb.

When not specified, waveform is recording or E-E mode.

▨ Sicherheitsbauteile nur gegen Original-Ersatzteile auswechseln!

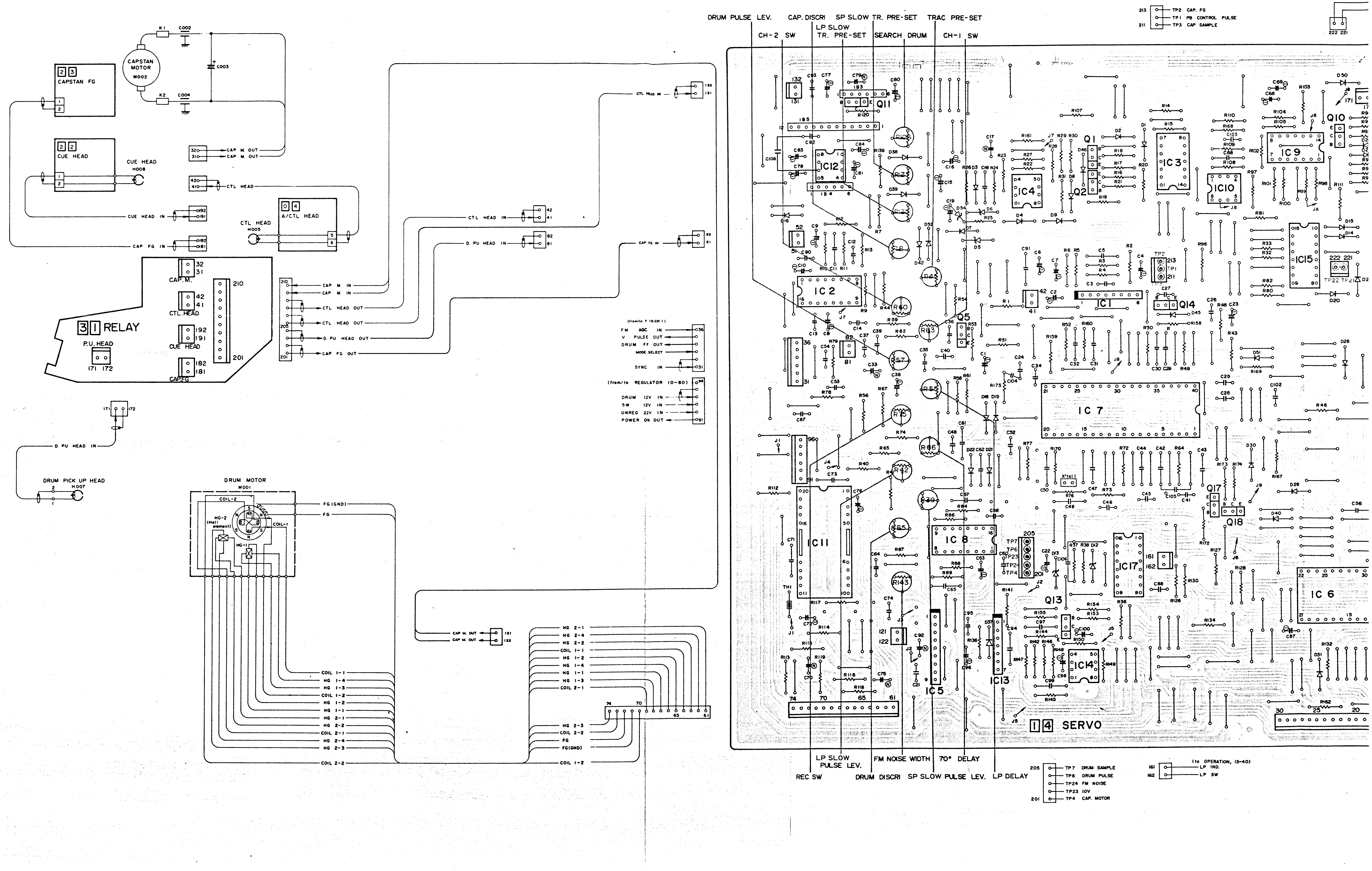
Replace safety components only with original spare parts!

Alle Gleichspannungen sind mit einem Digitalvoltmeter während Standard Play gemessen bei Aufnahme, () bei Wiedergabe.

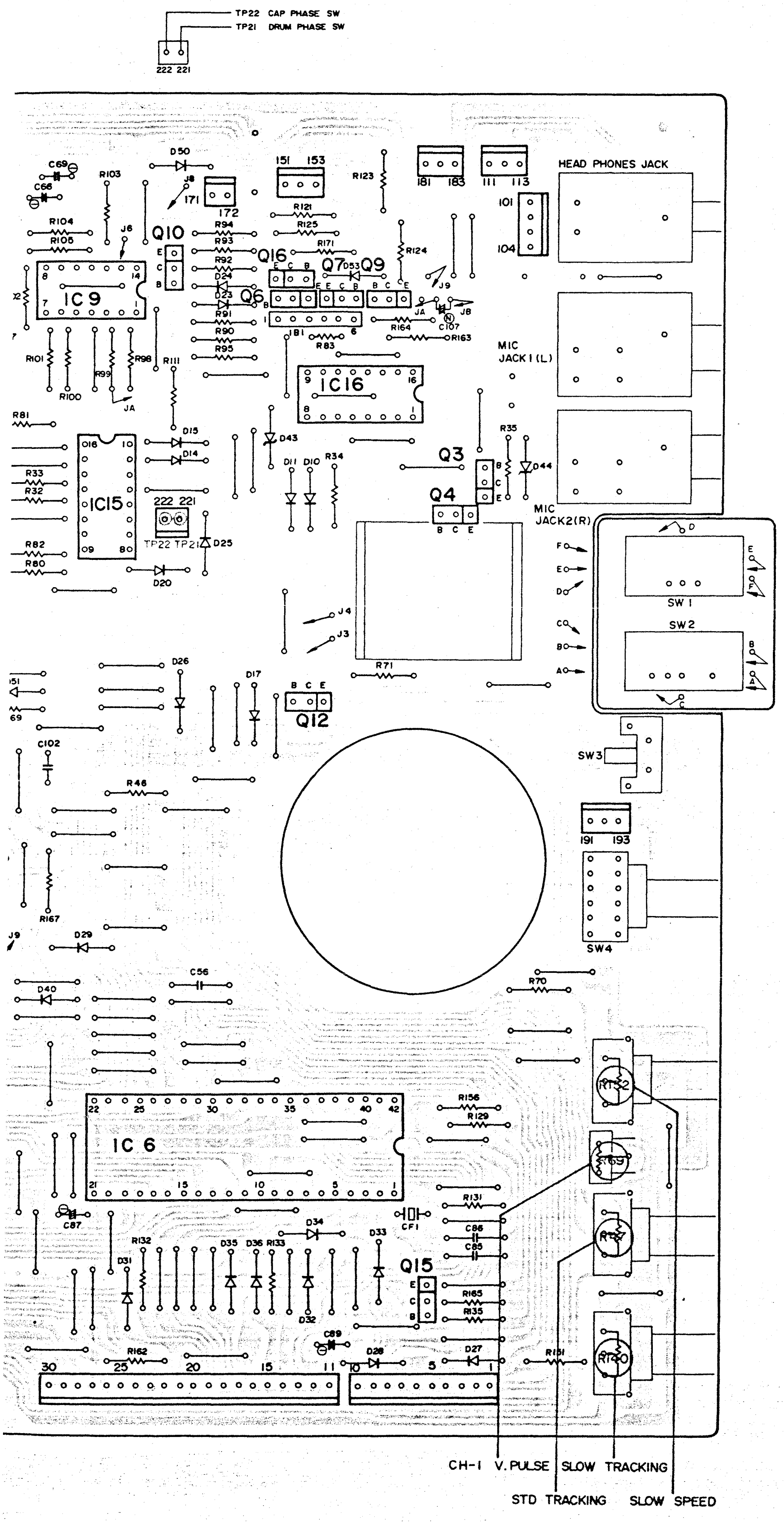
All DC voltages are measured with a digital voltmeter during Standard Play at record mode, () at playback.

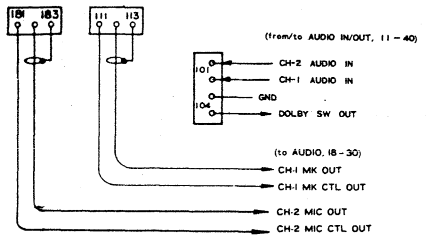
Servo-Platte · Servo circuits board

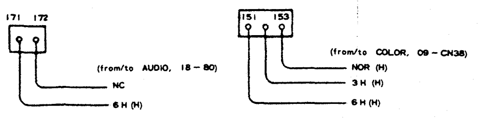
1 4

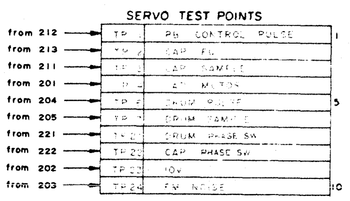


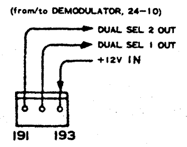
CAPSTAN MOTOR M002
K1
K2
C002
C003
C004
2 3 CAPSTAN FG
2 2 CUE HEAD
CUE HEAD H008
CAP M. OUT
CTL HEAD
CUE HEAD IN
CAP FG IN
0 4 A/CTL HEAD
CTL HEAD H005
3 1 RELAY
P.U. HEAD
CAP. M.
CTL. HEAD
CUE HEAD
CAPFG
CAP M IN
CTL HEAD OUT
D. PU HEAD OUT
CAP FG OUT
CTL HEAD IN
D. PU HEAD IN
CAP FG IN
(from/to Y 15-CH 1)
FM AGC IN
V PULSE OUT
DRUM FF OUT
MODE SELECT
SYNC IN
(from/to REGULATOR 10-80)
DRUM 12V IN
SW 12V IN
UNREG 22V IN
POWER ON OUT
D PU HEAD IN
DRUM PICK UP HEAD H007
DRUM MOTOR M001
COIL-2
COIL-1
HG-2 (Hall element)
HG-1
FG (GND)
FG
CAP M. OUT
HG 2-1
HG 2-4
HG 2-2
COIL 1-1
HG 1-2
HG 1-4
HG 1-1
HG 1-3
COIL 2-1
HG 1-4
HG 1-3
COIL 1-2
HG 1-2
HG 1-1
HG 2-1
HG 2-2
COIL 2-1
HG 2-4
HG 2-3
HG 2-3
COIL 2-2
FG
FG(GND)
COIL 2-2
COIL 1-2
DRUM PULSE LEV.
CAP. DISCRI
SP SLOW
TR. PRE-SET
TRAC PRE-SET
CH-2 SW
LP SLOW TR. PRE-SET
SEARCH DRUM
CH-1 SW
TP2 CAP. FG
TP1 PB CONTROL PULSE
TP3 CAP SAMPLE
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC17
Q1
Q2
Q5
Q10
Q11
Q13
Q14
Q17
Q18
1 4 SERVO
LP SLOW PULSE LEV.
REC SW
FM NOISE WIDTH
DRUM DISCRI
70° DELAY
SP SLOW PULSE LEV.
LP DELAY
TP7 DRUM SAMPLE
TP6 DRUM PULSE
TP24 FM NOISE
TP23 10V
TP4 CAP. MOTOR
(to OPERATION, 13-40)
LP IND.
LP SW

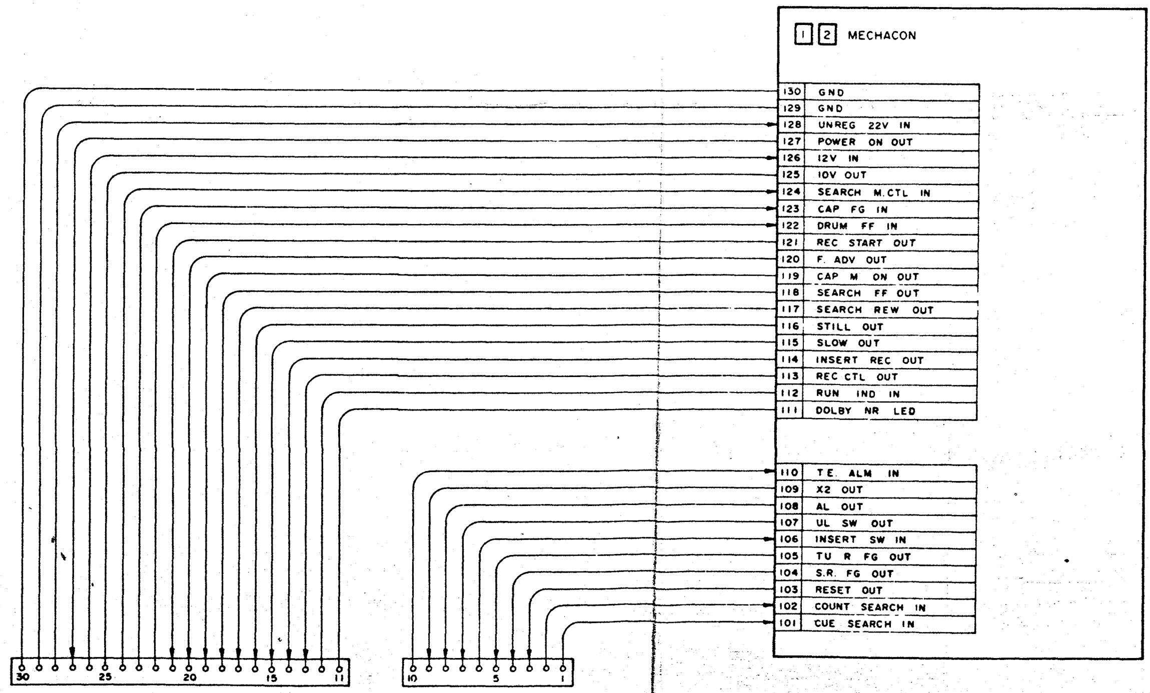

TP22 CAP PHASE SW
TP21 DRUM PHASE SW
222 221
HEAD PHONES JACK
MIC JACK 1 (L)
MIC JACK2 (R)
IC9
IC15
IC16
IC 6
Q3
Q4
Q6
Q7
Q9
Q10
Q12
Q15
Q16
SW 1
SW 2
SW3
SW4
151 153
181 183
111 113
101
104
191 193
TP22 TP21
CF1
RT152
RT69
RT70
CH-1 V.PULSE
SLOW TRACKING
STD TRACKING
SLOW SPEED


181 183
111 113
(from/to AUDIO IN/OUT, 11 - 40)
101
104
CH-2 AUDIO IN
CH-1 AUDIO IN
GND
DOLBY SW OUT
(to AUDIO, 18 - 30)
CH-1 MK OUT
CH-1 MK CTL OUT
CH-2 MIC OUT
CH-2 MIC CTL OUT

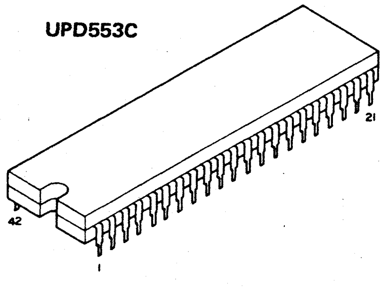

171 172
(from/to AUDIO, 18 - 80)
NC
6 H (H)
151 153
(from/to COLOR, 09 - CN38)
NOR (H)
3 H (H)
6 H (H)


SERVO TEST POINTS
from 212
from 213
from 211
from 201
from 204
from 205
from 221
from 222
from 202
from 203
TP 1 PB CONTROL PULSE
TP 2 CAP FG
TP 3 CAP SAMPLE
TP 4 CAP MOTOR
TP 5 DRUM PULSE
TP 6 DRUM SAMPLE
TP 21 DRUM PHASE SW
TP 22 CAP PHASE SW
TP 23 10V
TP 24 FM NOISE
1
5
10

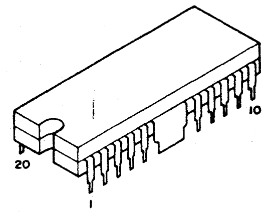

(from/to DEMODULATOR, 24-10)
DUAL SEL 2 OUT
DUAL SEL 1 OUT
+12V IN
191 193


1 2 MECHACON
130 GND
129 GND
128 UNREG 22V IN
127 POWER ON OUT
126 12V IN
125 10V OUT
124 SEARCH M.CTL IN
123 CAP FG IN
122 DRUM FF IN
121 REC START OUT
120 F. ADV OUT
119 CAP M ON OUT
118 SEARCH FF OUT
117 SEARCH REW OUT
116 STILL OUT
115 SLOW OUT
114 INSERT REC OUT
113 REC CTL OUT
112 RUN IND IN
111 DOLBY NR LED
110 T.E. ALM IN
109 X2 OUT
108 AL OUT
107 UL SW OUT
106 INSERT SW IN
105 TU R FG OUT
104 S.R. FG OUT
103 RESET OUT
102 COUNT SEARCH IN
101 CUE SEARCH IN
30
25
20
15
11
10
5
1

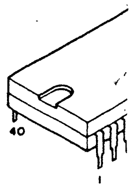
UPD553C



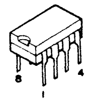
HA13008



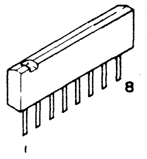
BA853



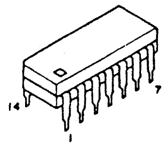
UPC393C
UPC1458C, UPC4558C



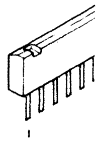
BA6305



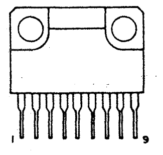
MB84066BM



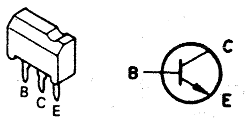
BA222V



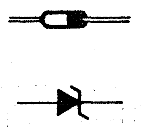
M54544L



2SD636

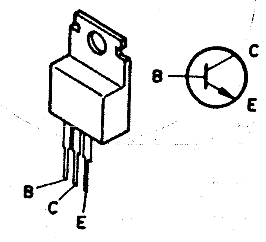


HZ SERIES BLACK LINE
RD SERIES BLUE LINE

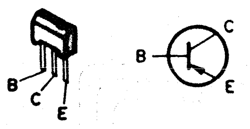


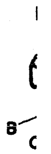
1S2473 Y

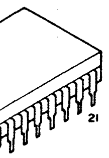
2SD389



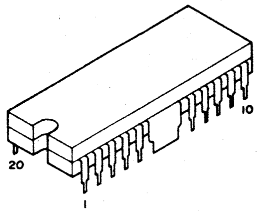
2SB641
2SB643



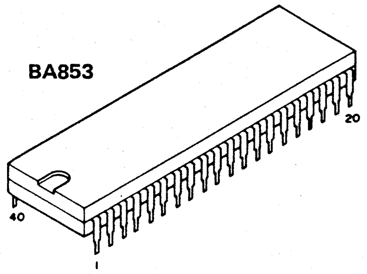




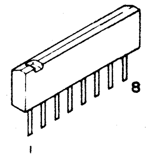
HA13008



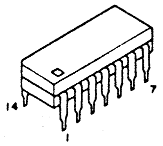
BA853



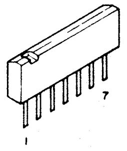
BA6305



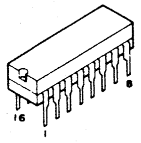
MB84066BM



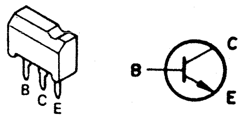
BA222V



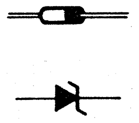
BA6302A
M54519P



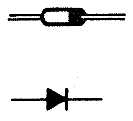
2SD636



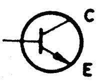
HZ SERIES BLACK LINE
RD SERIES BLUE LINE



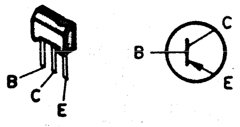
1S2473 YELLOW LINE



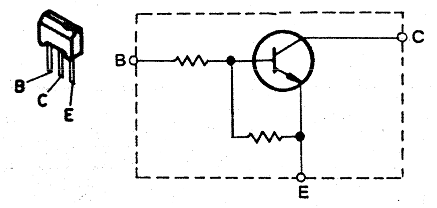
MA150
WHITE LINE



2SB641
2SB643

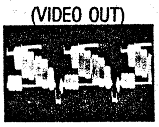


DTC142F



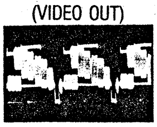
Video (Y-, Vorverstärker-, Farb- und Video-Zusatz) – Schaltungen
Video (Y, Pre amp., color and video-sub and mixing amp.) – circuit

CONN. 1-10
(VIDEO OUT)



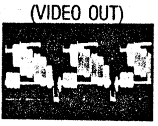
0.9 Vp-p

TP10
(VIDEO OUT)



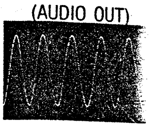
2 Vp-p

IC1-2
(VIDEO OUT)

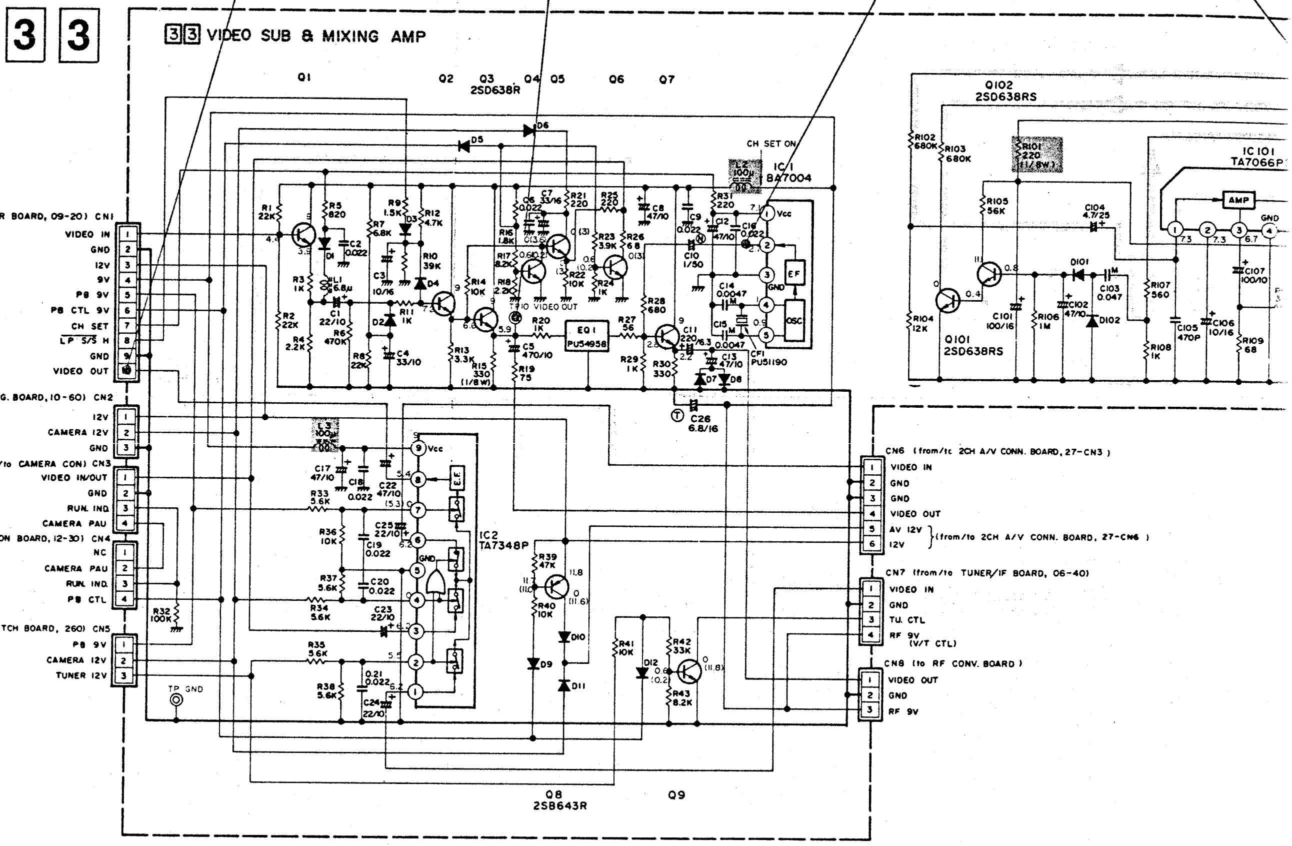


0.8 Vp-p

CONN.12-1
(AUDIO OUT)



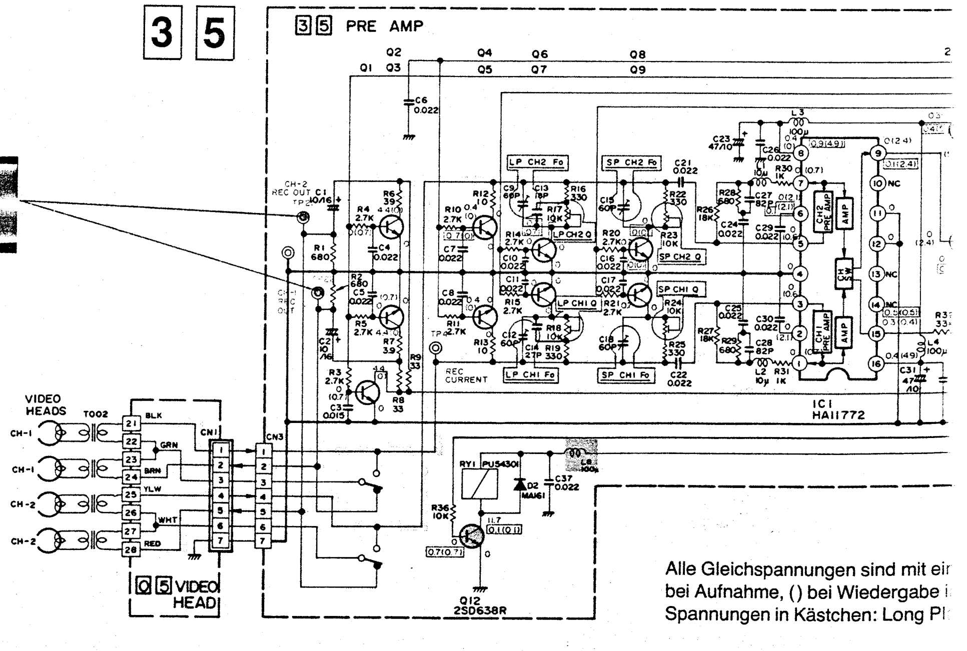
2.5 Vp-p



3 3
3 3 VIDEO SUB & MIXING AMP
Q1
Q2 Q3 Q4 Q5
2SD638R
Q6 Q7
(from/to COLOR BOARD, 09-20) CN1
VIDEO IN
GND
12V
9V
PB 9V
PB CTL 9V
CH SET
LP S/S H
GND
VIDEO OUT
(from/to REG. BOARD, 10-60) CN2
12V
CAMERA 12V
GND
(from/to CAMERA CON) CN3
VIDEO IN/OUT
GND
RUN. IND.
CAMERA PAU
(from/to MECHA CON BOARD, 12-30) CN4
NC
CAMERA PAU
RUN. IND.
PB CTL
(from/to SWITCH BOARD, 260) CN5
PB 9V
CAMERA 12V
TUNER 12V
TP GND
CH SET ON
IC1
BA7004
Vcc
EF
OSC
GND
EQ1
PU54958
CF1
PU51190
TP10 VIDEO OUT
C26
6.8/16
IC2
TA7348P
E.F.
Vcc
R32
100K
Q8
2SB643R
Q9
D5
D6
D10
D9
D11
D12
CN6 (from/to 2CH A/V CONN. BOARD, 27-CN3)
VIDEO IN
GND
GND
VIDEO OUT
AV 12V
12V
(from/to 2CH A/V CONN. BOARD, 27-CN6)
CN7 (from/to TUNER/IF BOARD, 06-40)
VIDEO IN
GND
TU. CTL
RF 9V
(V/T CTL)
CN8 (to RF CONV. BOARD)
VIDEO OUT
GND
RF 9V
Q102
2SD638RS
R102
680K
R103
680K
R101
220
(1/8W)
IC101
TA7066P
AMP
GND
R105
56K
C104
4.7/25
D101
D102
C101
100/16
R104
12K
Q101
2SD638RS
R106
1M
C102
47/10
C103
0.047
R107
560
R108
1K
C105
470P
C106
10/16
C107
100/10
R109
68

TP21, TP22
(REC OUT)

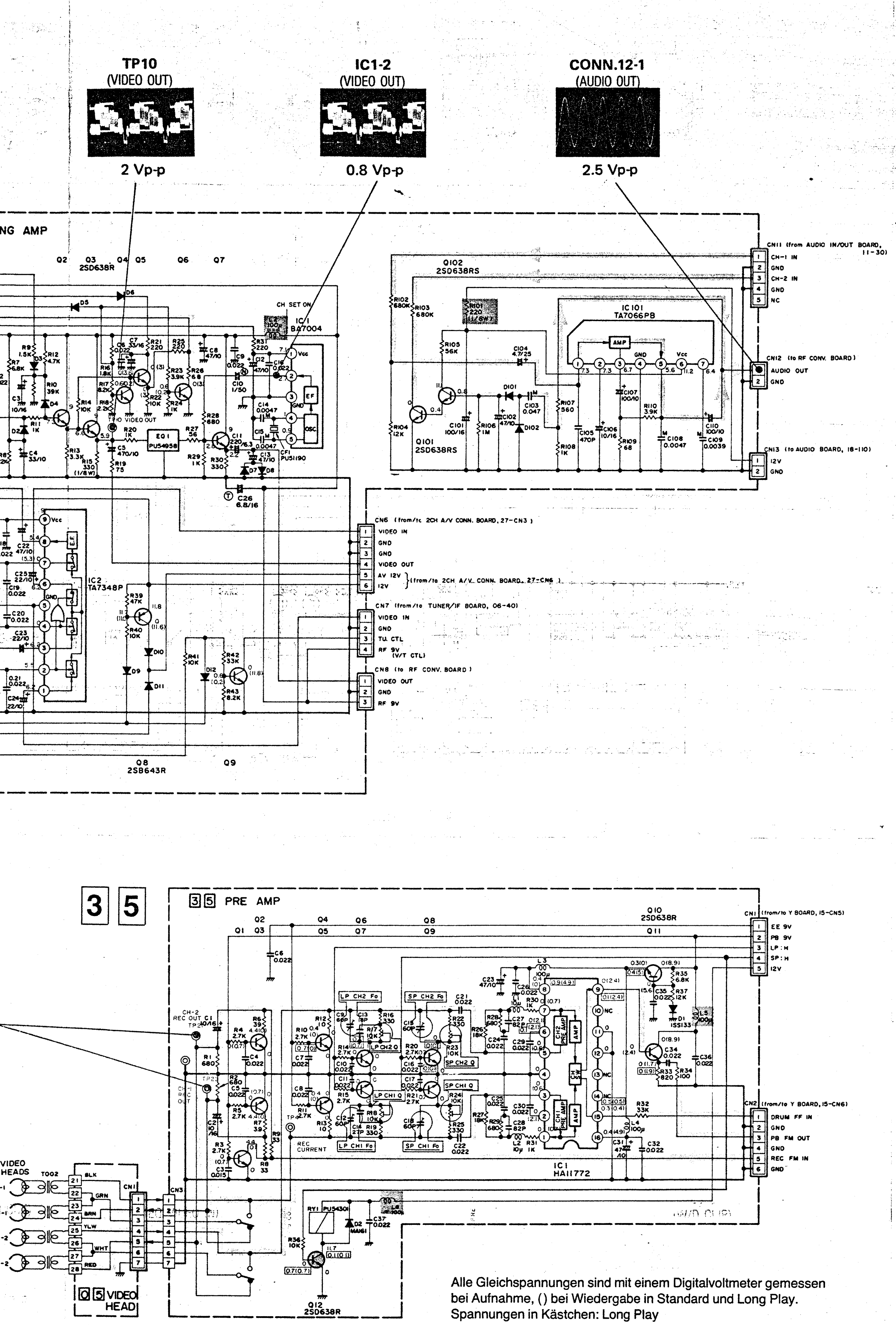
3.1 Vp-p



3 5
3 5 PRE AMP
Q1 Q2 Q3
Q4 Q5
Q6 Q7
Q8 Q9
C6
0.022
CH-2
REC OUT
TP22
CH-1
REC OUT
TP21
REC CURRENT
LP CH2 Fo
SP CH2 Fo
LP CH2 Q
SP CH2 Q
LP CH1 Q
SP CH1 Q
LP CH1 Fo
SP CH1 Fo
L3
100μ
CH2 PRE AMP
CH1 PRE AMP
AMP
SW
NC
IC1
HA11772
L2
10μ
L4
100μ
VIDEO HEADS
T002
CH-1
CH-1
CH-2
CH-2
BLK
GRN
BRN
YLW
WHT
RED
CN1
CN3
0 5 VIDEO HEAD
RY1
PU54301
D2
MA161
C37
0.022
R36
10K
Q12
2SD638R

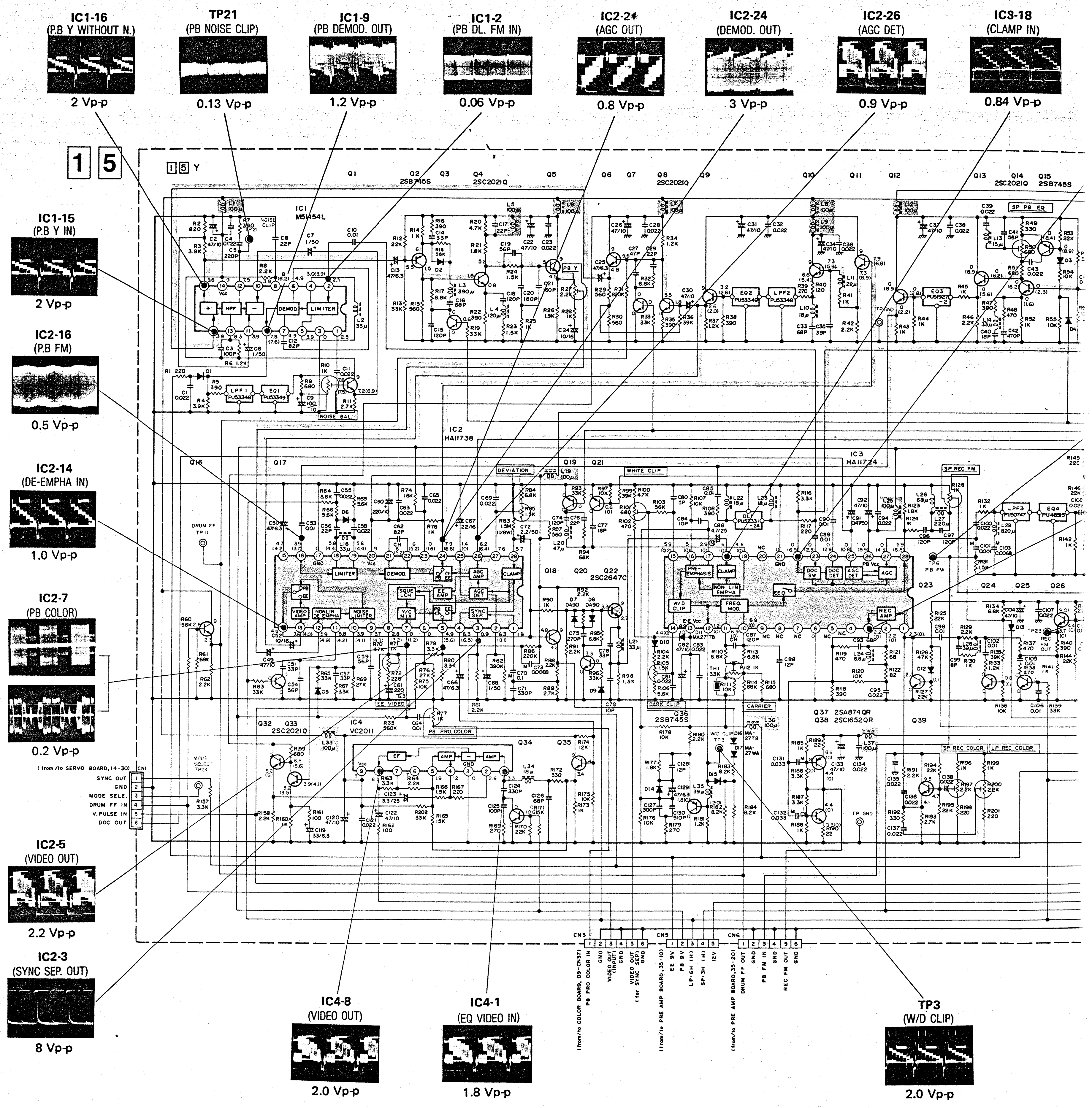
Alle Gleichspannungen sind mit ei
bei Aufnahme, () bei Wiedergabe i
Spannungen in Kästchen: Long Pl

All DC voltages are measured with
mode, () at playback.
In Long Play mode, the voltage is


TP10
(VIDEO OUT)
2 Vp-p
IC1-2
(VIDEO OUT)
0.8 Vp-p
CONN.12-1
(AUDIO OUT)
2.5 Vp-p
NG AMP
IC1 BA7004
IC2 TA7348P
IC101 TA7066PB
Q101 2SD638RS
Q102 2SD638RS
Q8 2SB643R
CN11 (from AUDIO IN/OUT BOARD, 11-30)
CN12 (to RF CONV. BOARD)
CN13 (to AUDIO BOARD, 16-110)
CN6 (from/to 2CH A/V CONN. BOARD, 27-CN3)
CN7 (from/to TUNER/IF BOARD, 06-40)
CN8 (to RF CONV. BOARD)
3 5
3 5 PRE AMP
Q10 2SD638R
IC1 HA11772
CN1 (from/to Y BOARD, 15-CN5)
CN2 (from/to Y BOARD, 15-CN6)
VIDEO HEADS
0 5 VIDEO HEAD
Q12 2SD638R

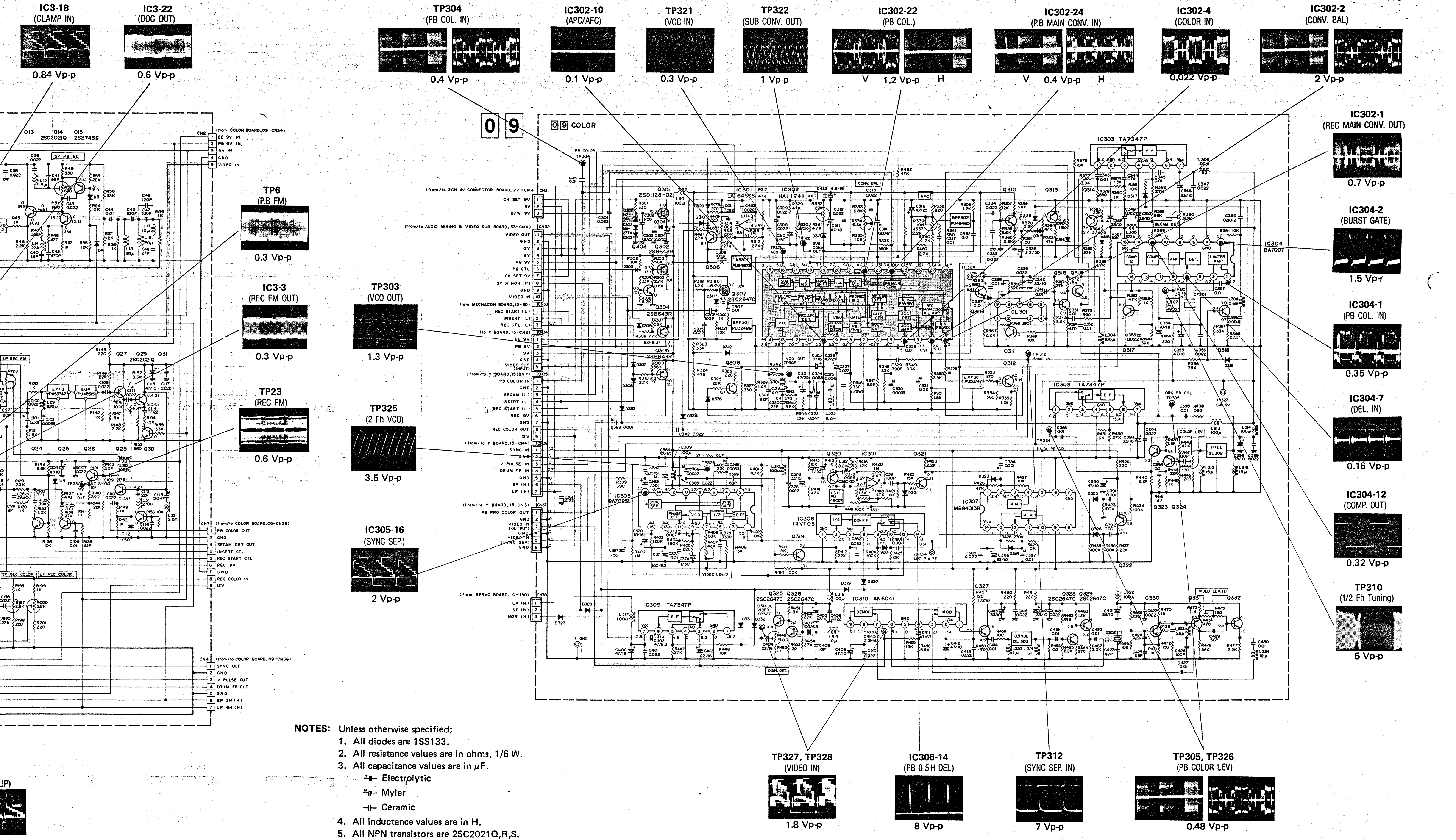
Alle Gleichspannungen sind mit einem Digitalvoltmeter gemessen bei Aufnahme, () bei Wiedergabe in Standard und Long Play. Spannungen in Kästchen: Long Play

All DC voltages are measured with a digital voltmeter at record mode, () at playback. In Long Play mode, the voltage is shown in the sqare brackets.


IC1-16
(P.B Y WITHOUT N.)
2 Vp-p
TP21
(PB NOISE CLIP)
0.13 Vp-p
IC1-9
(PB DEMOD. OUT)
1.2 Vp-p
IC1-2
(PB DL. FM IN)
0.06 Vp-p
IC2-24
(AGC OUT)
0.8 Vp-p
IC2-24
(DEMOD. OUT)
3 Vp-p
IC2-26
(AGC DET)
0.9 Vp-p
IC3-18
(CLAMP IN)
0.84 Vp-p
1 5
1 5 Y
IC1-15
(P.B Y IN)
2 Vp-p
IC2-16
(P.B FM)
0.5 Vp-p
IC2-14
(DE-EMPHA IN)
1.0 Vp-p
IC2-7
(PB COLOR)
0.2 Vp-p
IC2-5
(VIDEO OUT)
2.2 Vp-p
IC2-3
(SYNC SEP. OUT)
8 Vp-p
IC1 M51454L
IC2 HA11738
IC3 HA11724
IC4 VC2011
IC4-8
(VIDEO OUT)
2.0 Vp-p
IC4-1
(EQ VIDEO IN)
1.8 Vp-p
TP3
(W/D CLIP)
2.0 Vp-p

Wenn nicht anders gekennzeichnet, beziehen sich die angegebenen Signalformen auf Standard Play Aufnahme- oder E-E-Betrieb.

When not specified, waveform is Standard Play recording or E-E mode.


IC3-18 (CLAMP IN) 0.84 Vp-p
IC3-22 (DOC OUT) 0.6 Vp-p
TP304 (PB COL. IN) 0.4 Vp-p
IC302-10 (APC/AFC) 0.1 Vp-p
TP321 (VOC IN) 0.3 Vp-p
TP322 (SUB CONV. OUT) 1 Vp-p
IC302-22 (PB COL.) V 1.2 Vp-p H
IC302-24 (P.B MAIN CONV. IN) V 0.4 Vp-p H
IC302-4 (COLOR IN) 0.022 Vp-p
IC302-2 (CONV. BAL) 2 Vp-p
IC302-1 (REC MAIN CONV. OUT) 0.7 Vp-p
IC304-2 (BURST GATE) 1.5 Vp-p
IC304-1 (PB COL. IN) 0.35 Vp-p
IC304-7 (DEL. IN) 0.16 Vp-p
IC304-12 (COMP. OUT) 0.32 Vp-p
TP310 (1/2 Fh Tuning) 5 Vp-p
TP6 (P.B FM) 0.3 Vp-p
IC3-3 (REC FM OUT) 0.3 Vp-p
TP23 (REC FM) 0.6 Vp-p
TP303 (VCO OUT) 1.3 Vp-p
TP325 (2 Fh VCO) 3.5 Vp-p
IC305-16 (SYNC SEP.) 2 Vp-p
TP327, TP328 (VIDEO IN) 1.8 Vp-p
IC306-14 (PB 0.5H DEL) 8 Vp-p
TP312 (SYNC SEP. IN) 7 Vp-p
TP305, TP326 (PB COLOR LEV) 0.48 Vp-p
IP) p-p
09
09 COLOR
IC301 LA 6458S
IC302 HA11741
IC303 TA7347P
IC304 BA7007
IC305 BA7025L
IC306 14VT05
IC307 MB84013B
IC308 TA7347P
IC309 TA7347P
IC310 AN6041
CN2 (from COLOR BOARD, 09-CN34)
CN31 (from/to 2CH AV CONNECTOR BOARD, 27-CN4)
CN32 (from/to AUDIO MIXING & VIDEO SUB BOARD, 33-CN4)
CN33 (from MECHACON BOARD, 12-30)
CN34 (to Y BOARD, 15-CN2)
CN35 (from/to Y BOARD, 15-CN7)
CN36 (from/to Y BOARD, 15-CN4)
CN37 (from/to Y BOARD, 15-CN3)
CN38 (from SERVO BOARD, 14-150)
CN7 (from/to COLOR BOARD, 09-CN35)
CN4 (from/to COLOR BOARD, 09-CN36)

NOTES: Unless otherwise specified;

1. All diodes are 1SS133.
2. All resistance values are in ohms, 1/6 W.
3. All capacitance values are in μF.
   - Electrolytic
   - Mylar
   - Ceramic
4. All inductance values are in H.
5. All NPN transistors are 2SC2021Q,R,S.
6. All PNP transistors are 2SB641Q.

▨ Sicherheitsbauteile nur gegen Original-Ersatzteile auswechseln!

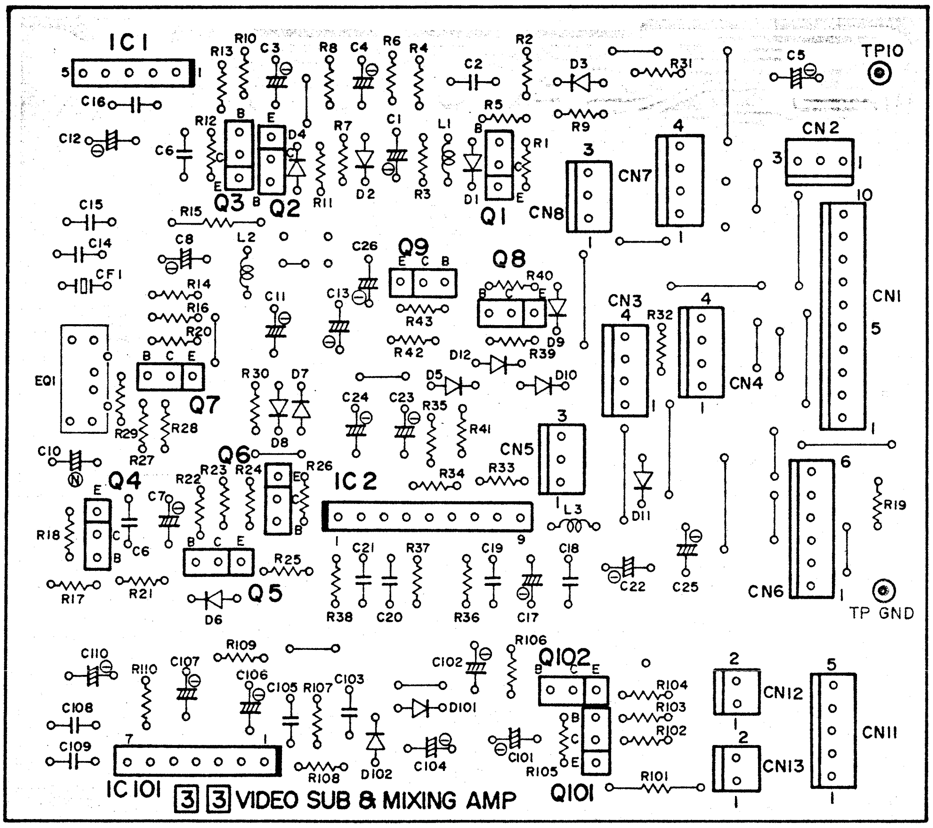
Replace safety components only with original spare parts!

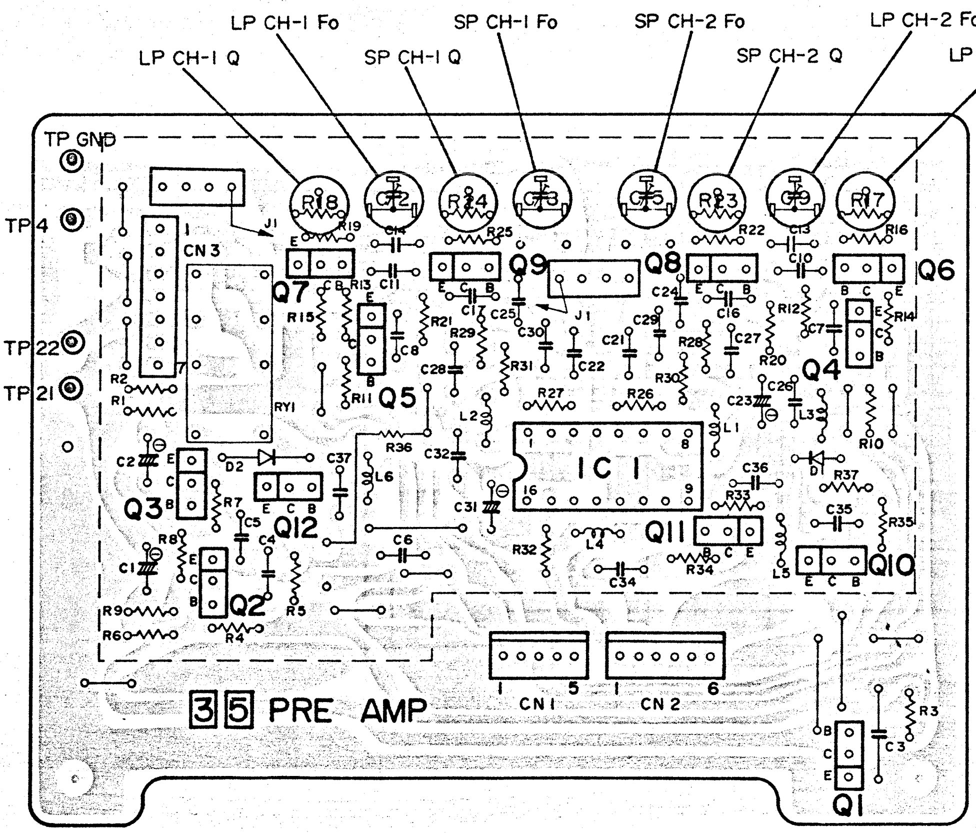
Alle Gleichspannungen sind mit einem Digitalvoltmeter während Standard Play gemessen bei Aufnahme, ( ) bei Wiedergabe.

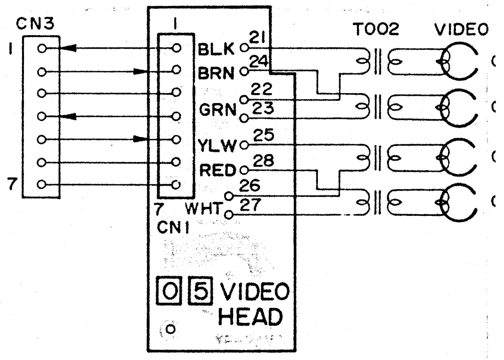
All DC voltages are measured with a digital voltmeter during Standard Play at record mode, ( ) at playback.

Video-Zusatz-Platte · Video sub and mixing circuit board 33

Vorverstärker-Platte · Pre amp. circuit board 35

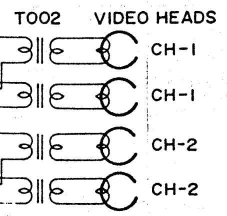

IC1
IC2
IC101
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q101
Q102
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN11
CN12
CN13
EQ1
CF1
TP10
TP GND
33 VIDEO SUB & MIXING AMP

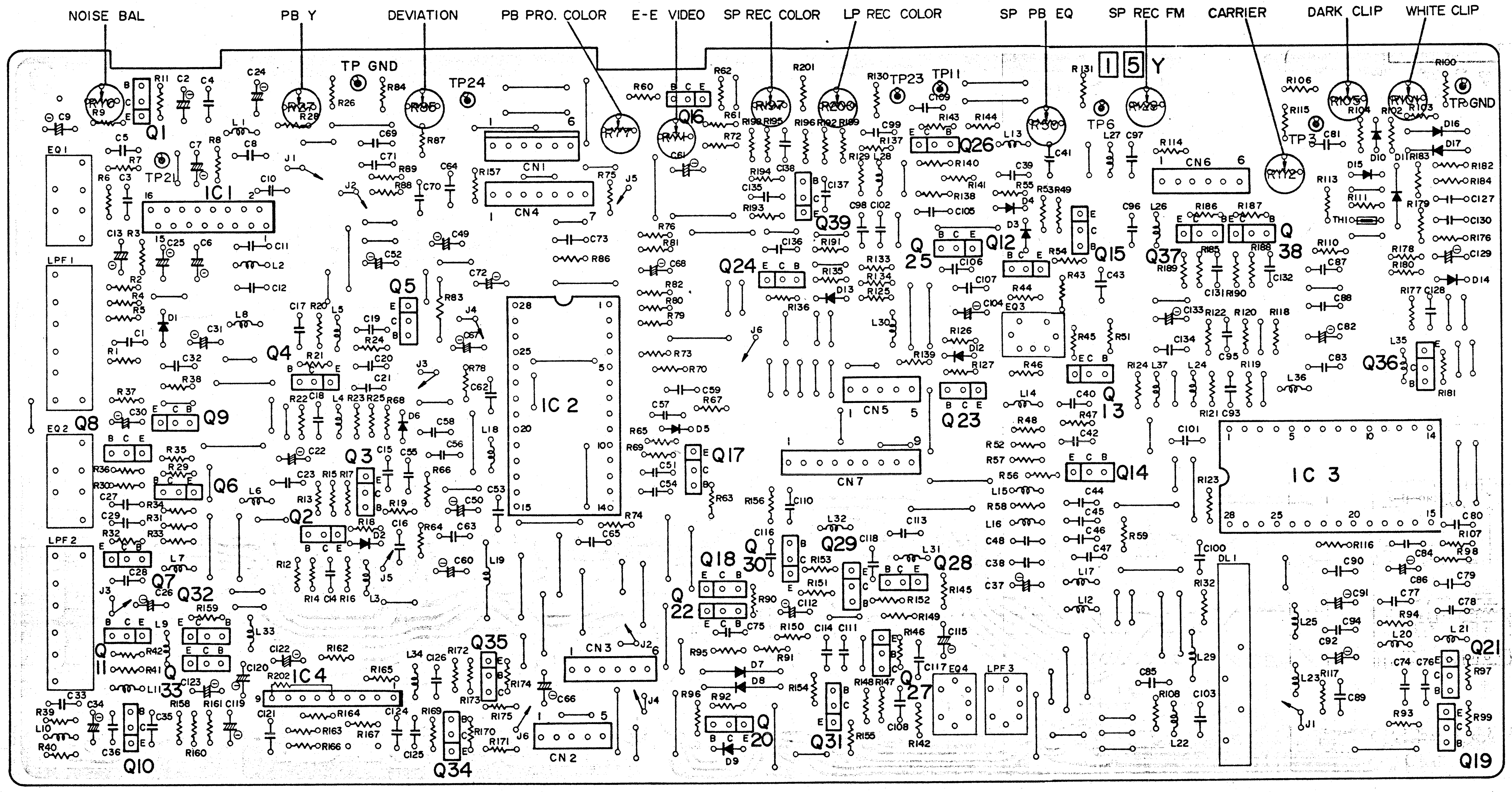

LP CH-1 Fo
LP CH-1 Q
SP CH-1 Fo
SP CH-1 Q
SP CH-2 Fo
SP CH-2 Q
LP CH-2 Fo
LP CH-2 Q
TP GND
TP4
TP22
TP21
R18
C72
R24
C73
C75
R23
C79
R17
J1
CN3
RY1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
IC1
CN1
CN2
35 PRE AMP


CN3
1
7
CN1
BLK
BRN
GRN
YLW
RED
WHT
21
24
22
23
25
28
26
27
T002
VIDEO
05 VIDEO HEAD

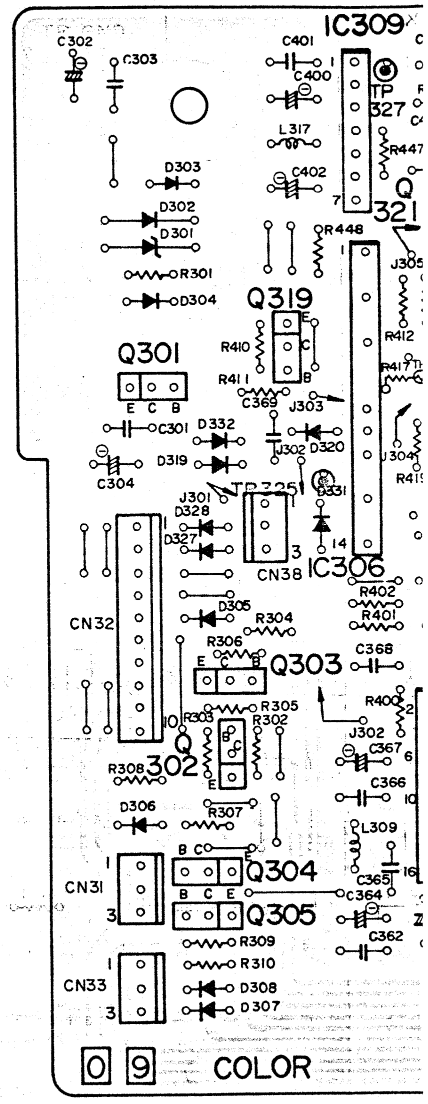
Y-Platte · Y circuit board

1 5

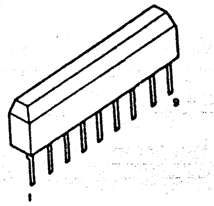

T002
VIDEO HEADS
CH-1
CH-1
CH-2
CH-2


NOISE BAL
PB Y
DEVIATION
PB PRO. COLOR
E-E VIDEO
SP REC COLOR
LP REC COLOR
SP PB EQ
SP REC FM
CARRIER
DARK CLIP
WHITE CLIP
TP GND
TP24
TP23
TP11
TP6
TP3
TP GND
TP21
1 5 Y
IC1
IC2
IC3
IC4
CN1
CN2
CN3
CN4
CN5
CN6
CN7
EQ1
EQ2
EQ3
EQ4
LPF1
LPF2
LPF3
DL1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29
Q30
Q31
Q32
Q33
Q34
Q35
Q36
Q37
Q38
Q39

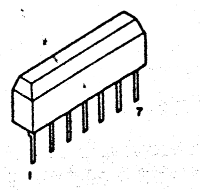
Farbplatte · Color circui


IC309
IC306
Q301
Q302
Q303
Q304
Q305
Q319
CN31
CN32
CN33
CN38
0 9 COLOR

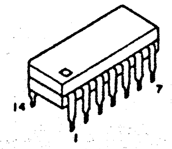
LA6458S
TA7348P



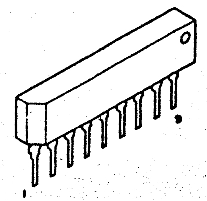
TA7066PB
TA7347P



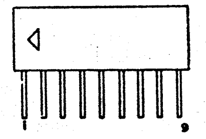
MB84013B



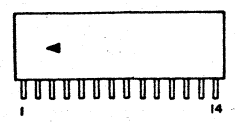
AN6041



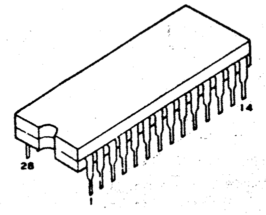
VC2011



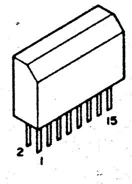
14VT05



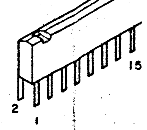
HA11738, HA111724
HA11741



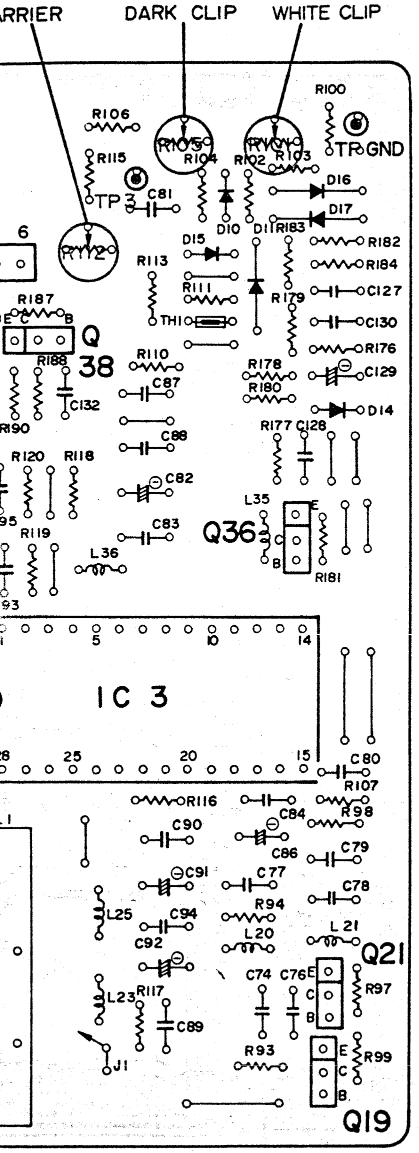
M51454L

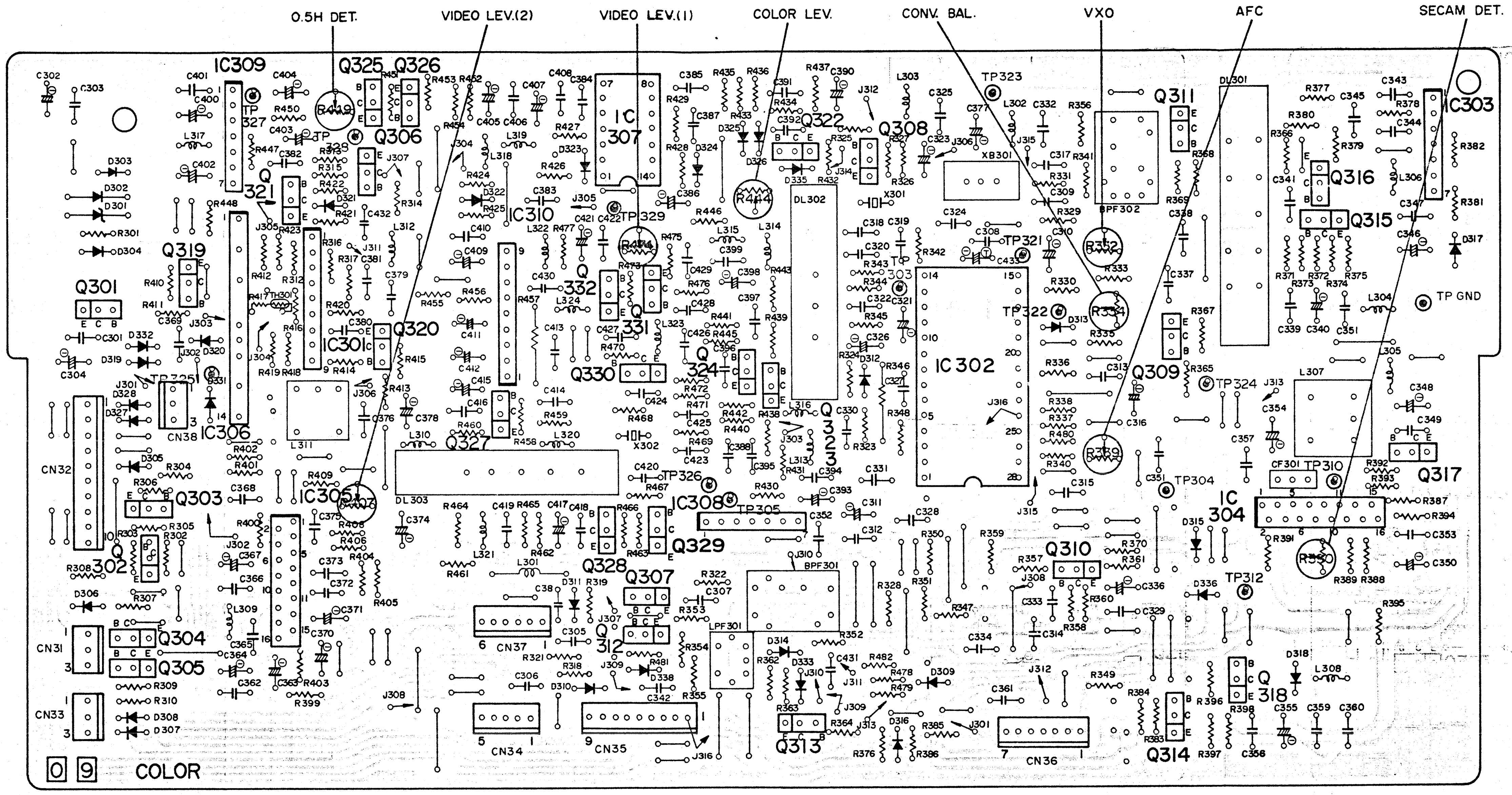


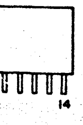
BA7023L
BA7007 (EG on



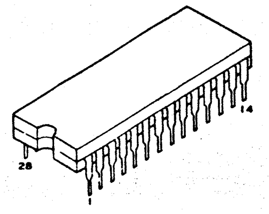
Farbplatte · Color circuit board 09


ARRIER
DARK CLIP
WHITE CLIP
TP GND
IC 3
Q19
Q21
CN

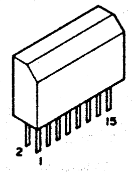

0.5H DET.
VIDEO LEV.(2)
VIDEO LEV.(1)
COLOR LEV.
CONV. BAL.
VXO
AFC
SECAM DET.
IC309
Q325
Q326
IC307
IC310
IC301
IC302
IC303
IC304
IC305
IC306
IC308
DL301
DL302
DL303
CN31
CN32
CN33
CN34
CN35
CN36
CN37
CN38
TP GND
09 COLOR



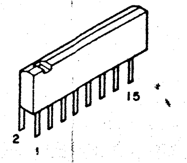
HA11738, HA111724
HA11741



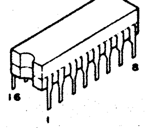
M51454L



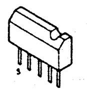
BA7023L
BA7007 (EG only)



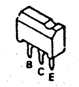
HA1172



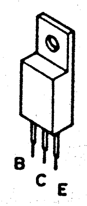
BA7004



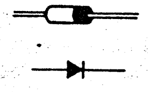
2SC2021, 2SD637,
2SB745, 2SC2647,
2SA874, 2SB641,
2SC1652, 2SB643



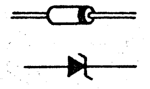
2SD1128-02



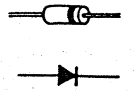
1SS133 YELLOW LINE
MA161 BLUE LINE
MA27TA YELLOW LINE
MA27TB BLUE LINE
MA27WA BLUE LINE



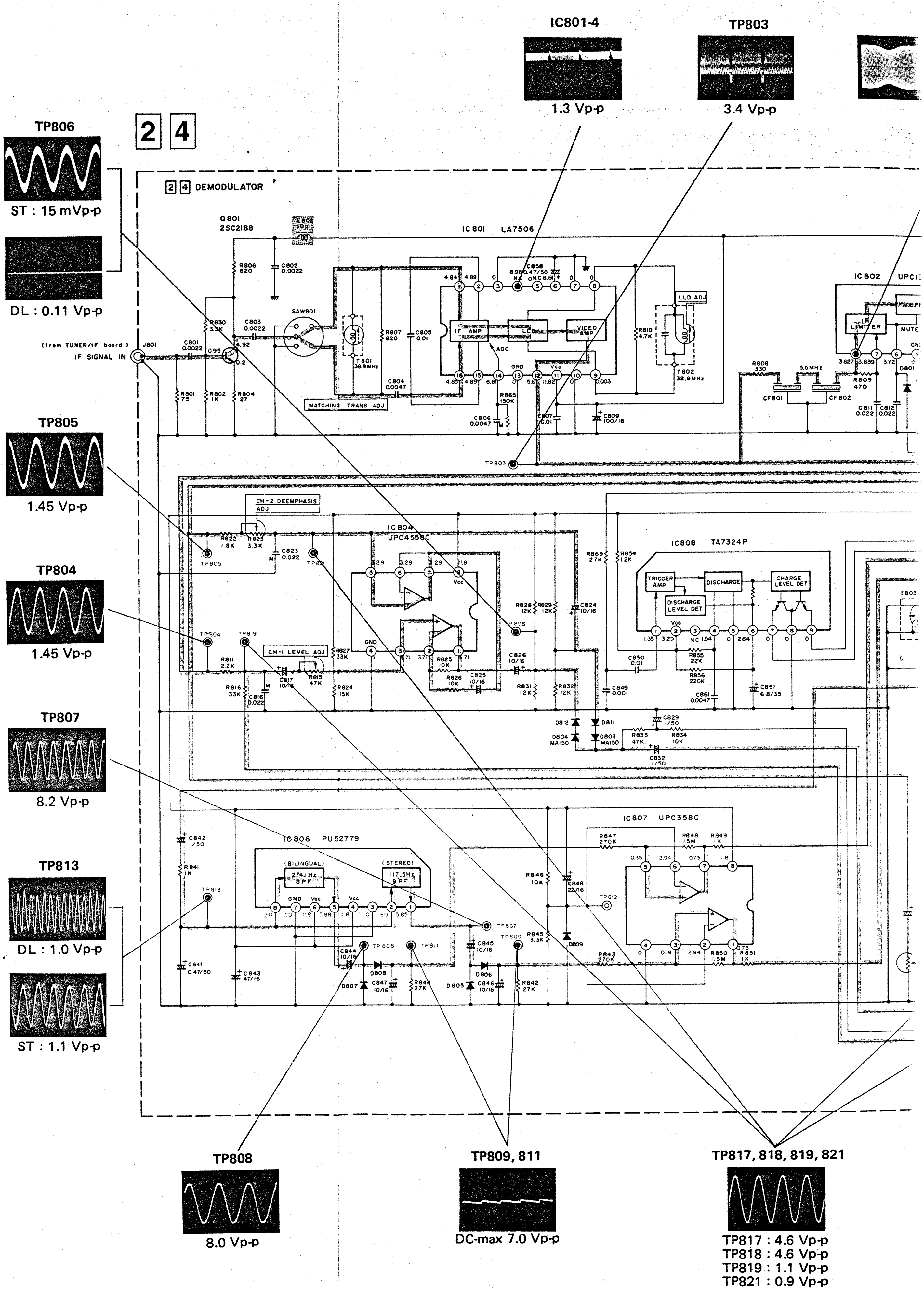
HZ9A1



OA90



Audio- (Audio-Eingang/Ausgang-, Audio- und Demodulator-) Schaltu
Audio (Audio In/Out, Audio and Demodulator) circuits


IC801-4
1.3 Vp-p
TP803
3.4 Vp-p
TP806
ST : 15 mVp-p
DL : 0.11 Vp-p
2 4
2 4 DEMODULATOR
Q801 2SC2188
L802
IC801 LA7506
IC802 UPC1
SAW801
T801 38.9MHz
T802 38.9MHz
IF AMP
VIDEO AMP
AGC
LLD ADJ
MATCHING TRANS ADJ
LIMITER
MUTE
CF801
CF802
5.5MHz
(from TUNER/IF board) IF SIGNAL IN
J801
TP805
1.45 Vp-p
CH-2 DEEMPHASIS ADJ
IC804 UPC4558C
IC808 TA7324P
TRIGGER AMP
DISCHARGE
DISCHARGE LEVEL DET
CHARGE LEVEL DET
TP804
1.45 Vp-p
TP819
CH-1 LEVEL ADJ
TP821
TP806
TP807
8.2 Vp-p
IC806 PU52779
(BILINGUAL) 274.1Hz BPF
(STEREO) 117.5Hz BPF
IC807 UPC358C
TP813
DL : 1.0 Vp-p
ST : 1.1 Vp-p
TP808
TP809
TP811
TP812
TP808
8.0 Vp-p
TP809, 811
DC-max 7.0 Vp-p
TP817, 818, 819, 821
TP817 : 4.6 Vp-p
TP818 : 4.6 Vp-p
TP819 : 1.1 Vp-p
TP821 : 0.9 Vp-p

ngang/Ausgang-, Audio- und Demodulator-) Schaltungen
(Out, Audio and Demodulator) circuits

1 1 + 1 8 + 2 4

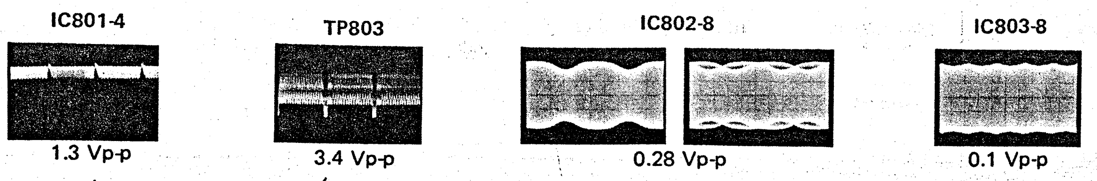
NOTES: Unless otherwise specified;
1. NPN type transistors are 2SD638R, S.
2. Diodes are 1SS133.
3. All resistance values are in ohms, 1/6 W.
4. All capacitance values are in μF.
   - +⊣⊢ : Electrolytic
   - M⊣⊢ : Mylar
   - ⊣⊢ : Ceramic
5. All inductance values are in H.

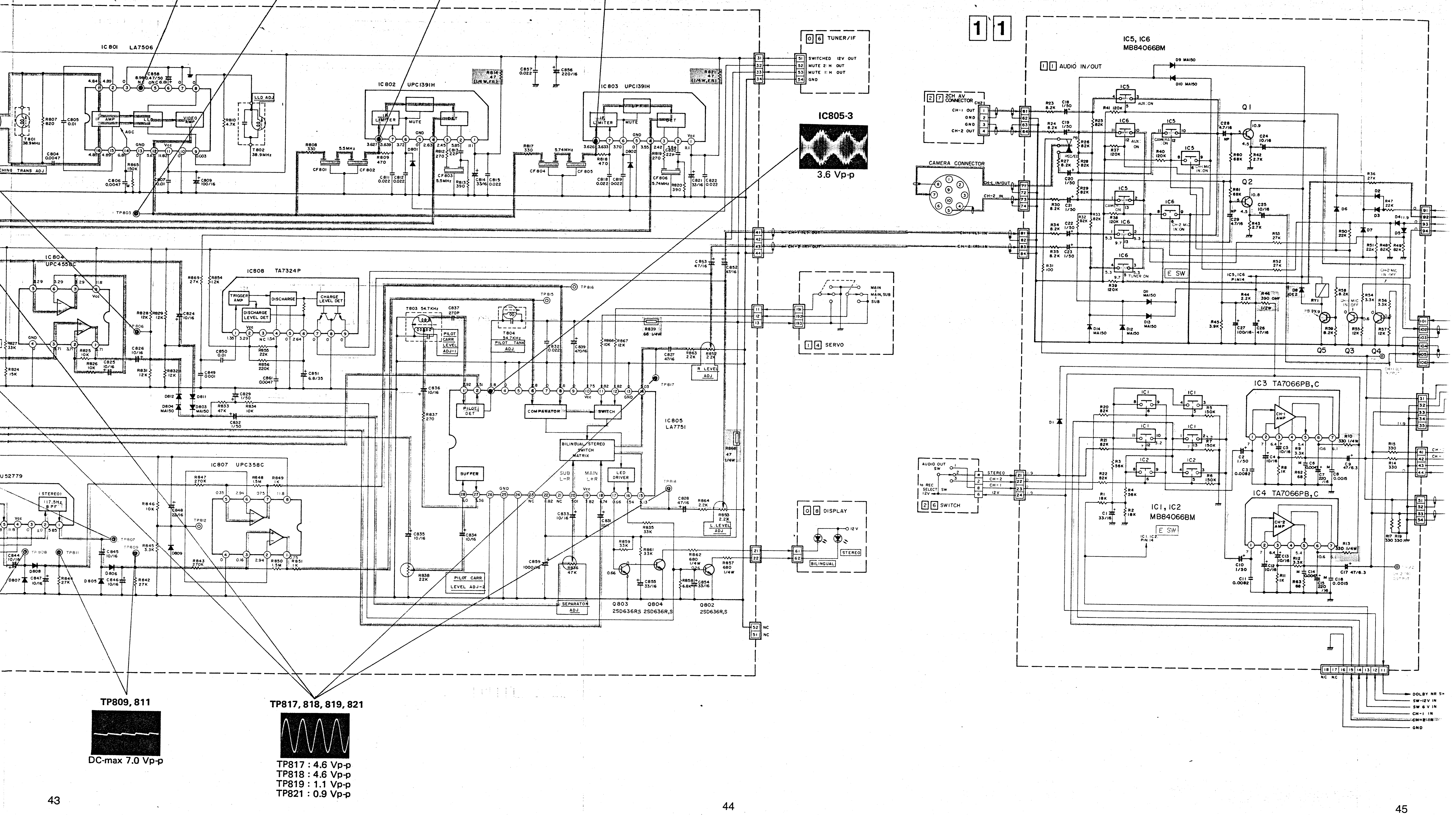
Alle Gleichspannungen sind mit einem Digitalvoltmeter gemessen bei Aufnahme, () bei Wiedergabe.

All DC voltages are measured with a digital voltmeter at record mode, () at playback.

Wenn nicht
Signalforme

When not s


IC801-4
1.3 Vp-p
TP803
3.4 Vp-p
IC802-8
0.28 Vp-p
IC803-8
0.1 Vp-p


IC801 LA7506
IF AMP
LLD
VIDEO AMP
AGC
T801 38.9MHz
T802 38.9MHz
LLD ADJ
TP803
IC802 UPC1391H
IF LIMITER
MUTE
DET
CF801
CF802
CF803 5.5MHz
IC803 UPC1391H
CF804
CF805
CF806 5.74MHz
0 6 TUNER/IF
SWITCHED 12V OUT
MUTE 2:H OUT
MUTE 1:H OUT
GND
IC805-3
3.6 Vp-p
IC804 UPC4558C
IC808 TA7324P
TRIGGER AMP
DISCHARGE
CHARGE LEVEL DET
DISCHARGE LEVEL DET
T803 54.7KHz
PILOT CARR LEVEL ADJ-1
T804 54.7KHz PILOT TANK ADJ
PILOT DET
COMPARATOR
SWITCH
BILINGUAL STEREO SWITCH MATRIX
BUFFER
LED DRIVER
IC805 LA7751
PILOT CARR LEVEL ADJ-2
SEPARATOR ADJ
R LEVEL ADJ
L LEVEL ADJ
IC807 UPC358C
Q803 Q804 2SD636R,S 2SD636R,S
Q802 2SD636R,S
CH-1 (L) OUT
CH-2 (R) OUT
MAIN
MAIN, SUB
SUB
1 4 SERVO
0 8 DISPLAY
STEREO
BILINGUAL
TP809, 811
DC-max 7.0 Vp-p
TP817, 818, 819, 821
TP817 : 4.6 Vp-p
TP818 : 4.6 Vp-p
TP819 : 1.1 Vp-p
TP821 : 0.9 Vp-p
1 1
IC5, IC6 MB84066BM
1 1 AUDIO IN/OUT
2 7 2CH AV CONNECTOR
CH-1 OUT
GND
CH-2 OUT
CAMERA CONNECTOR
CH-1 IN/OUT
CH-2 IN
Q1
Q2
Q3
Q4
Q5
E SW
IC3 TA7066PB,C
CH-1 AMP
IC4 TA7066PB,C
CH-2 AMP
IC1, IC2 MB84066BM
AUDIO OUT SW
to REC SELECT SW
2 6 SWITCH
DOLBY NR 5+
SW-12V IN
SW 6 V IN
CH-1 IN
CH-2 IN
GND

gemessen

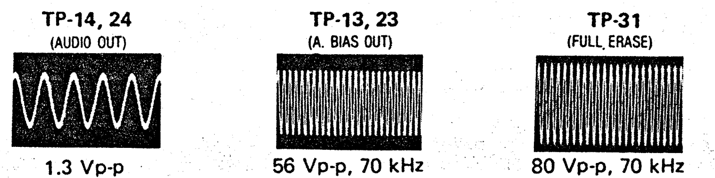
record

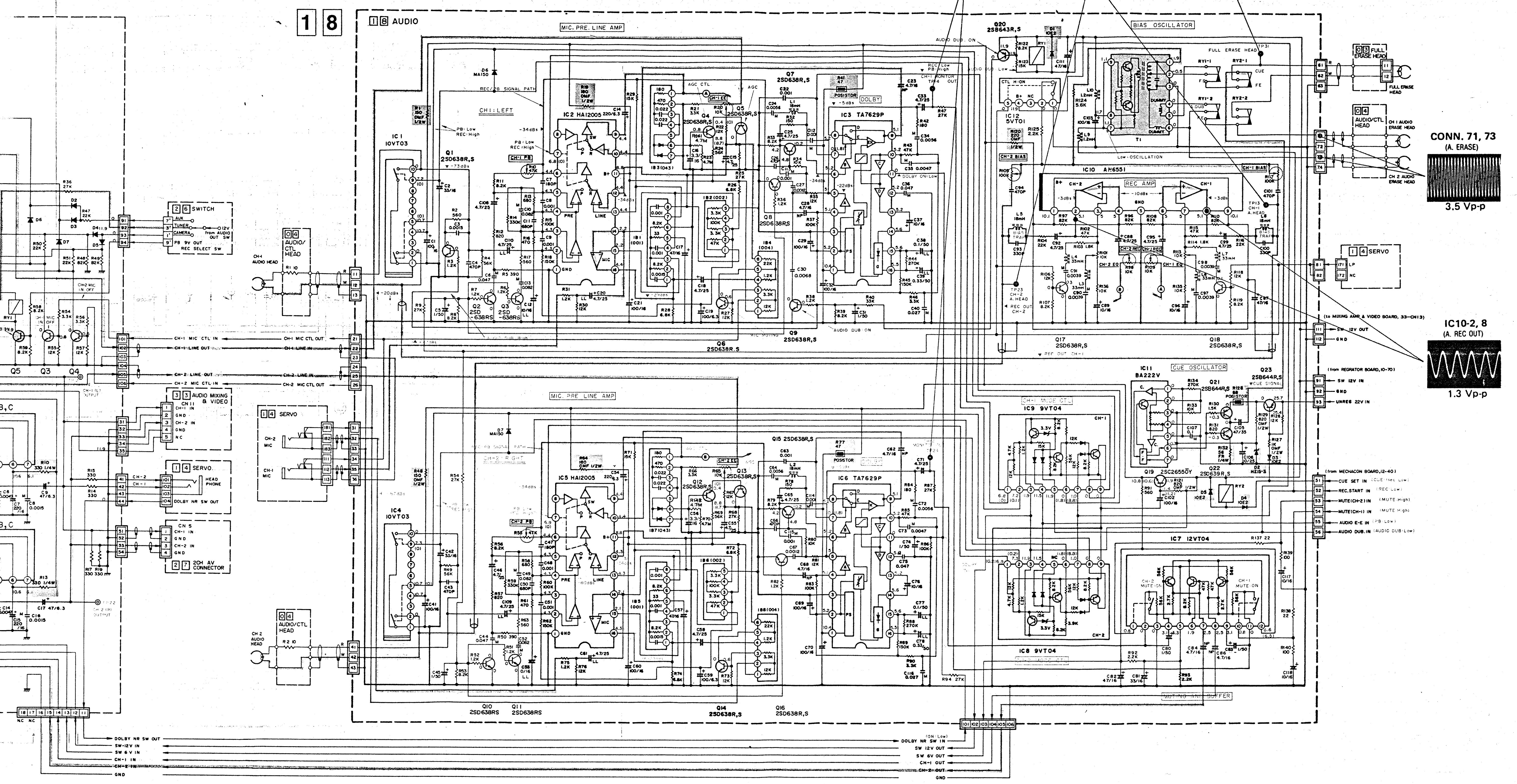
Wenn nicht anders gekennzeichnet, beziehen sich die angegebenen Signalformen auf Aufnahme- oder E-E-Betrieb.

When not specified, waveform is recording or E-E mode.

▨ Sicherheitsbauteile nur gegen Original-Ersatzteile auswechseln!

Replace safety components only with original spare parts!

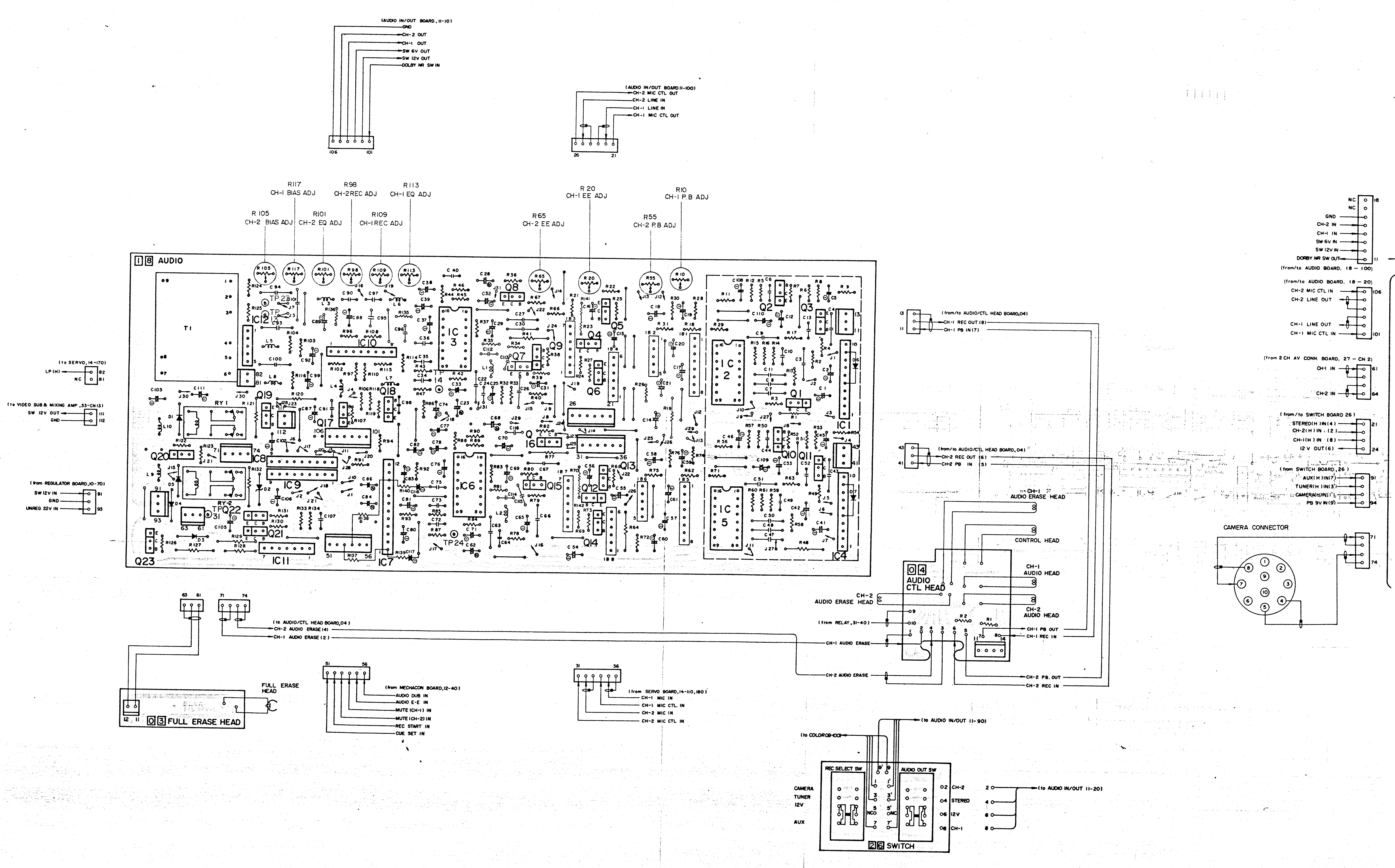




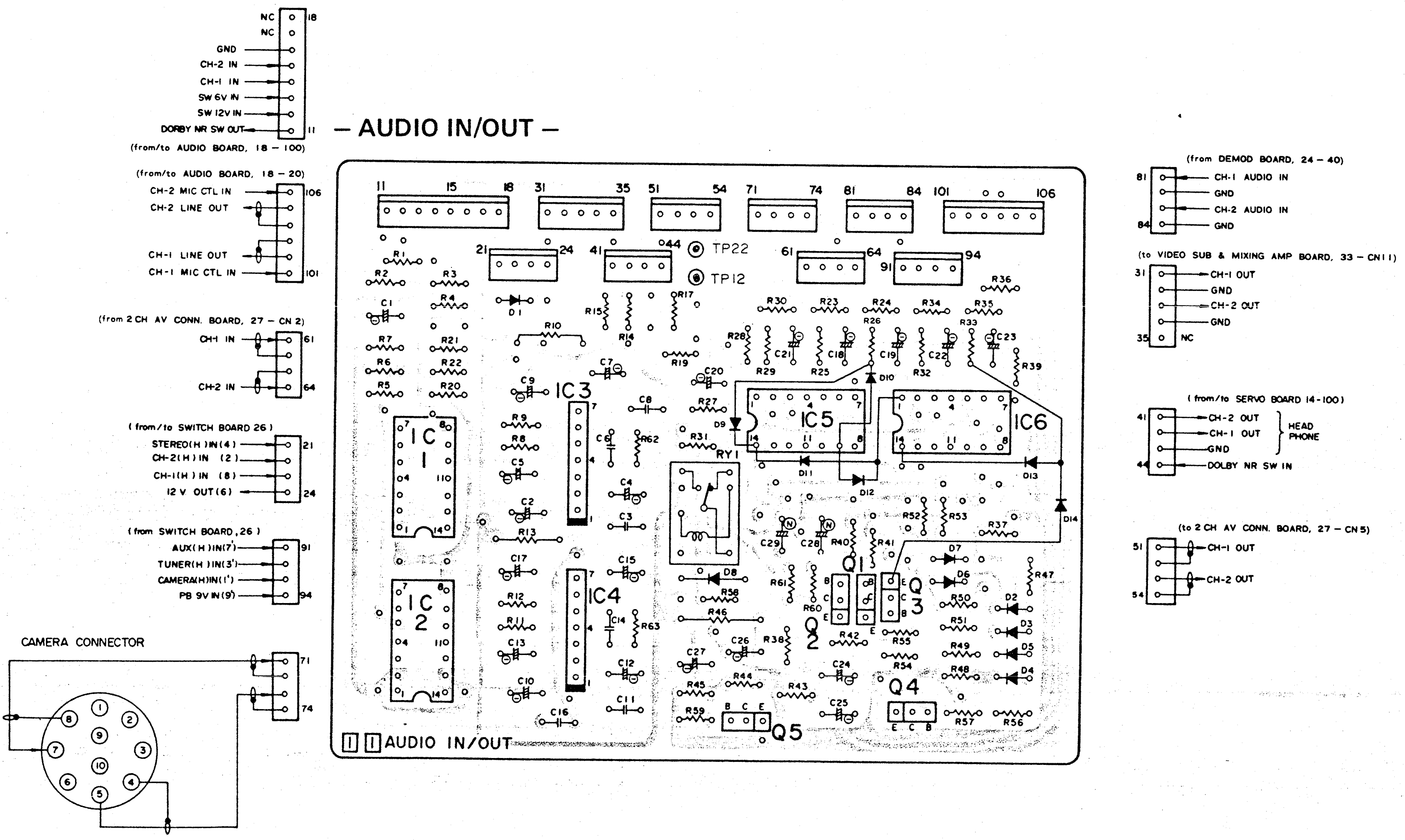
1 8
1 8 AUDIO
MIC. PRE. LINE AMP
CH-1 : LEFT
IC1 10VT03
IC2 HA12005
IC3 TA7629P
DOLBY
POSISTOR
AGC CTL
Q1 2SD638R,S
Q2 2SD638RS
Q3 2SD638RS
Q4 2SD638R,S
Q5 2SD638R,S
Q6 2SD638R,S
Q7 2SD638R,S
Q8 2SD638RS
Q9 2SD638R,S
REC/PB SIGNAL PATH
AUDIO DUB. ON
Q20 2SB643R,S
BIAS OSCILLATOR
FULL ERASE HEAD
CUE
FE
IC12 5VT01
IC10 AN6551
REC AMP
T1
OSCILLATION
CH-1 BIAS
CH-2 BIAS
CH-2 EQ
CH-1 EQ
Q17 2SD638R,S
Q18 2SD638R,S
TP23
TP13
0 3 FULL ERASE HEAD
0 4 AUDIO/CTL HEAD
CH 1 AUDIO ERASE HEAD
CH 2 AUDIO ERASE HEAD
CONN. 71, 73
(A. ERASE)
3.5 Vp-p
1 4 SERVO
LP
NC
(to MIXING AMP & VIDEO BOARD, 33-CN13)
SW 12V OUT
GND
IC10-2, 8
(A. REC OUT)
1.3 Vp-p
IC11 BA222V
CUE OSCILLATOR
Q21 2SB644R,S
Q23 2SB644R,S
Q19 2SC2655OY
Q22 2SD639R,S
RY2
(from REGULATOR BOARD, 10-70)
SW 12V IN
GND
UNREG 22V IN
(from MECHACON BOARD, 12-40)
CUE SET IN
REC.START IN
MUTE(CH-2) IN
MUTE(CH-1) IN
AUDIO E-E IN
AUDIO DUB. IN
IC9 9VT04
CH-1 MUTE CTL
IC7 12VT04
IC8 9VT04
MUTING AND BUFFER
MIC. PRE. LINE AMP
CH-2 : RIGHT
IC4 10VT03
IC5 HA12005
IC6 TA7629P
Q10 2SD638RS
Q11 2SD638RS
Q12 2SD638R,S
Q13 2SD638R,S
Q14 2SD638R,S
Q15 2SD638R,S
Q16 2SD638R,S
0 4 AUDIO/CTL HEAD
CH-1 AUDIO HEAD
CH 2 AUDIO HEAD
1 4 SERVO
CH-2 MIC
CH-1 MIC
2 6 SWITCH
AUX
TUNER
CAMERA
PB 9V OUT
REC SELECT SW
3 3 AUDIO MIXING & VIDEO
CH-1 IN
GND
CH-2 IN
NC
1 4 SERVO
HEAD PHONE
DOLBY NR SW OUT
CN 5
2 7 2CH AV CONNECTOR
CH-1 MIC CTL IN
CH-1 LINE OUT
CH-2 LINE OUT
CH-2 MIC CTL IN
Q5 Q3 Q4
DOLBY NR SW OUT
SW-12V IN
SW 6V IN
CH-1 IN
CH-2 IN
GND
DOLBY NR SW IN
SW 12V OUT
SW 6V OUT
CH-1 OUT
CH-2 OUT

Audio-Platte · Audio circuit board 18

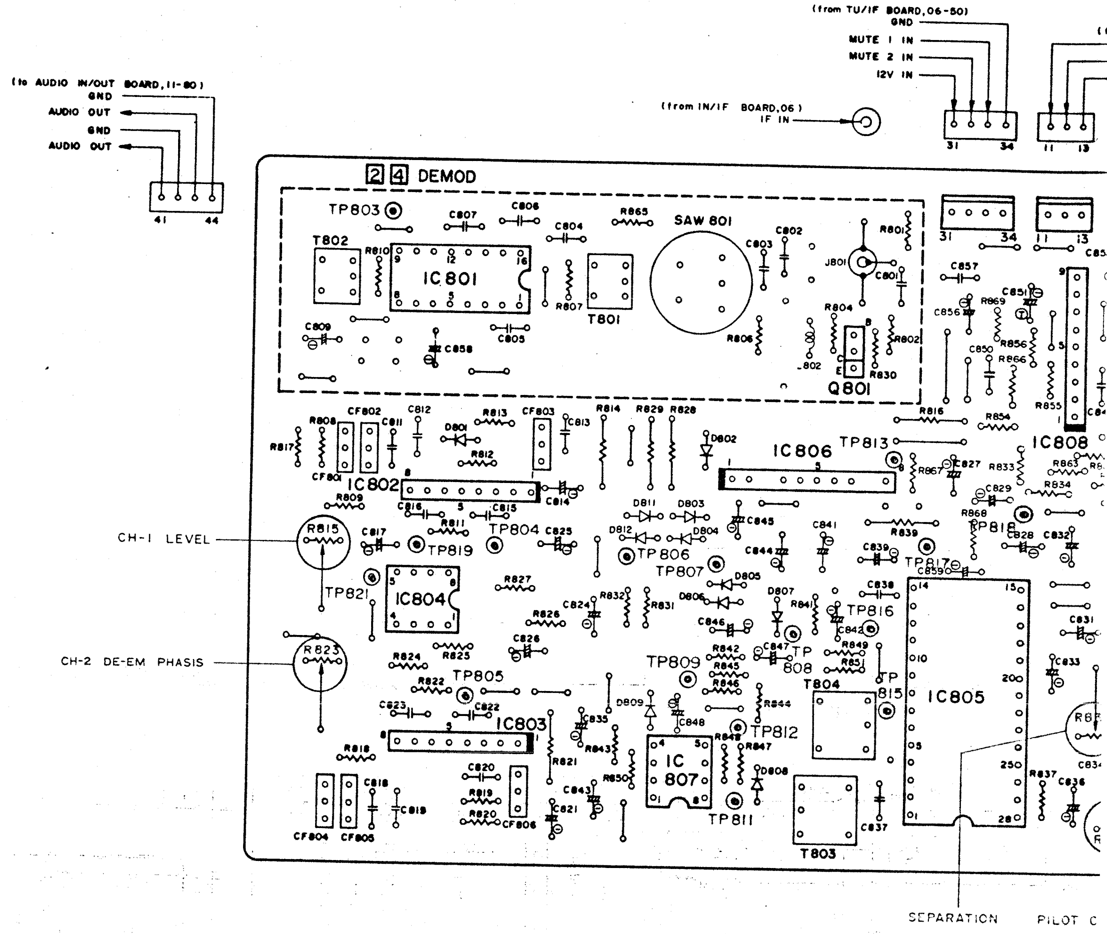
Audio-Eingang/Ausg


(AUDIO IN/OUT BOARD, 11-10)
GND
CH-2 OUT
CH-1 OUT
SW 6V OUT
SW 12V OUT
DOLBY NR SW IN
(AUDIO IN/OUT BOARD 11-100)
CH-2 MIC CTL OUT
CH-2 LINE IN
CH-1 LINE IN
CH-1 MIC CTL OUT
R117 CH-1 BIAS ADJ
R98 CH-2 REC ADJ
R113 CH-1 EQ ADJ
R105 CH-2 BIAS ADJ
R101 CH-2 EQ ADJ
R109 CH-1 REC ADJ
R20 CH-1 EE ADJ
R10 CH-1 P.B ADJ
R65 CH-2 EE ADJ
R55 CH-2 P.B ADJ
18 AUDIO
T1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
(to SERVO, 14-170)
LP (H)
NC
(to VIDEO SUB & MIXING AMP, 33-CN13)
SW 12V OUT
GND
(from REGULATOR BOARD, 10-70)
SW 12V IN
GND
UNREG 22V IN
RY1
RY-2
TP24
(to AUDIO/CTL HEAD BOARD, 04)
CH-2 AUDIO ERASE (4)
CH-1 AUDIO ERASE (2)
FULL ERASE HEAD
03 FULL ERASE HEAD
(from MECHACON BOARD, 12-40)
AUDIO DUB IN
AUDIO E-E IN
MUTE (CH-1) IN
MUTE (CH-2) IN
REC START IN
CUE SET IN
(from SERVO BOARD, 14-110, 180)
CH-1 MIC IN
CH-1 MIC CTL IN
CH-2 MIC IN
CH-2 MIC CTL IN
(from/to AUDIO/CTL HEAD BOARD, 04)
CH-1 REC OUT (8)
CH-1 PB IN (7)
CH-2 REC OUT (6)
CH-2 PB IN (5)
CH-1 AUDIO ERASE HEAD
CONTROL HEAD
CH-1 AUDIO HEAD
CH-2 AUDIO HEAD
CH-2 AUDIO ERASE HEAD
04 AUDIO CTL HEAD
(from RELAY, 31-40)
CH-1 AUDIO ERASE
CH-2 AUDIO ERASE
CH-1 PB OUT
CH-1 REC IN
CH-2 PB OUT
CH-2 REC IN
(to AUDIO IN/OUT 11-90)
(to COLOR 08-100)
REC SELECT SW
AUDIO OUT SW
CAMERA
TUNER
12V
AUX
CH-2
STEREO
12V
CH-1
(to AUDIO IN/OUT 11-20)
28 SWITCH
NC
GND
CH-2 IN
CH-1 IN
SW 6V IN
SW 12V IN
DOLBY NR SW OUT
(from/to AUDIO BOARD, 18-100)
(from/to AUDIO BOARD, 18-20)
CH-2 MIC CTL IN
CH-2 LINE OUT
CH-1 LINE OUT
CH-1 MIC CTL IN
(from 2CH AV CONN. BOARD, 27-CN2)
CH-1 IN
CH-2 IN
(from/to SWITCH BOARD 26)
STEREO(H)IN(4)
CH-2(H)IN (2)
CH-1(H)IN (8)
12V OUT (6)
(from SWITCH BOARD, 26)
AUX(H)IN(7)
TUNER(H)IN(3)
CAMERA(H)IN(1)
PB 9V IN(9)
CAMERA CONNECTOR

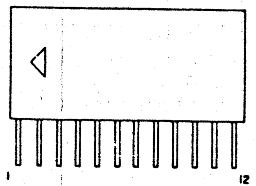
Audio-Eingang/Ausgang-Platte · Audio In/Out board 1 1


– AUDIO IN/OUT –
NC
NC
GND
CH-2 IN
CH-1 IN
SW 6V IN
SW 12V IN
DOLBY NR SW OUT
(from/to AUDIO BOARD, 18 – 100)
(from/to AUDIO BOARD, 18 – 20)
CH-2 MIC CTL IN
CH-2 LINE OUT
CH-1 LINE OUT
CH-1 MIC CTL IN
(from 2 CH AV CONN. BOARD, 27 – CN 2)
CH-1 IN
CH-2 IN
(from/to SWITCH BOARD 26)
STEREO(H)IN(4)
CH-2(H)IN (2)
CH-1(H)IN (8)
12 V OUT(6)
(from SWITCH BOARD, 26)
AUX(H)IN(7)
TUNER(H)IN(3)
CAMERA(H)IN(1)
PB 9V IN(9)
CAMERA CONNECTOR
TP22
TP12
IC1
IC2
IC3
IC4
IC5
IC6
RY1
Q1
Q2
Q3
Q4
Q5
1 1 AUDIO IN/OUT
(from DEMOD BOARD, 24 – 40)
CH-1 AUDIO IN
GND
CH-2 AUDIO IN
GND
(to VIDEO SUB & MIXING AMP BOARD, 33 – CN11)
CH-1 OUT
GND
CH-2 OUT
GND
NC
(from/to SERVO BOARD 14 - 100)
CH-2 OUT
CH-1 OUT
GND
DOLBY NR SW IN
HEAD PHONE
(to 2 CH AV CONN. BOARD, 27 – CN 5)
CH-1 OUT
CH-2 OUT

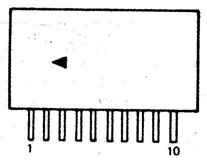
Audio-Demodulator Platte · Audio Demodulator board 2 4


(from TU/IF BOARD, 06 - 50)
GND
MUTE 1 IN
MUTE 2 IN
12V IN
(from IN/IF BOARD, 06)
IF IN
(to AUDIO IN/OUT BOARD, 11 - 80)
GND
AUDIO OUT
GND
AUDIO OUT
2 4 DEMOD
TP803
T802
IC801
T801
SAW 801
Q801
IC802
IC806
TP813
IC808
TP804
TP806
TP807
TP819
TP821
IC804
TP805
TP809
T804
TP816
TP817
TP818
IC805
IC803
IC 807
TP812
TP811
T803
CH-1 LEVEL
CH-2 DE-EM PHASIS
SEPARATION
PILOT C

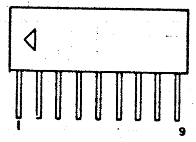
12VT04



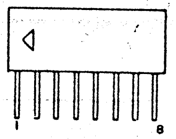
10VT03



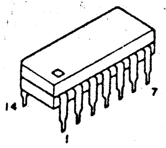
9VT04



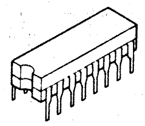
PU52779



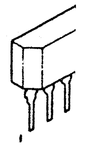
MB84066BM



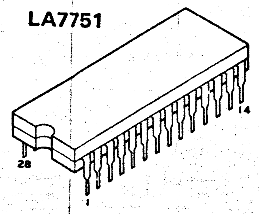
HA12005
TA7629P
LA7506



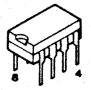
A



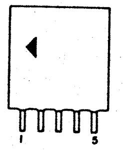
LA7751



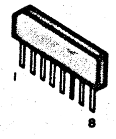
UPC358C, UPC4558C



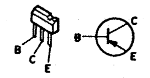
5VT01



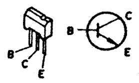
UPC1391H
TA7324P
8 PIN



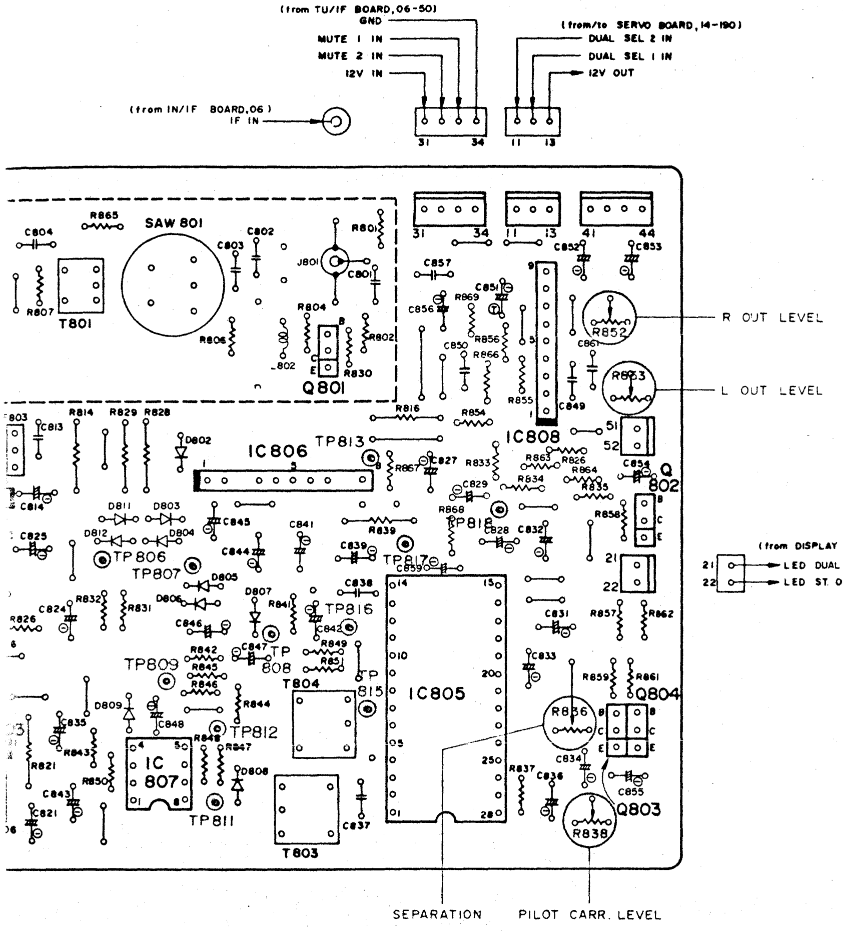
2SB643R,S
2SB644R,S



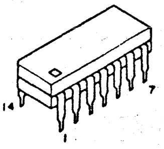
2SD638R, S
2SD639R, S
2SC2188
2SD636



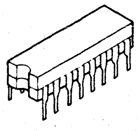
udio Demodulator board 2 4


(from TU/IF BOARD,06-50)
GND
MUTE 1 IN
MUTE 2 IN
12V IN
31
34
(from/to SERVO BOARD,14-190)
DUAL SEL 2 IN
DUAL SEL 1 IN
12V OUT
11
13
(from IN/IF BOARD,06)
IF IN
SAW 801
T801
Q801
J801
R OUT LEVEL
R852
L OUT LEVEL
R853
IC806
IC808
Q802
(from DISPLAY BOARD,08-60)
21
22
LED DUAL OUT
LED ST. OUT
TP813
TP818
TP806
TP807
TP817
TP816
TP808
TP809
TP812
TP811
TP815
T804
T803
IC805
IC 807
Q804
Q803
R836
R838
SEPARATION
PILOT CARR. LEVEL

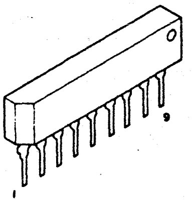
MB84066BM



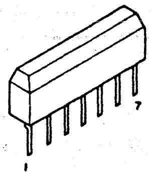
HA12005
TA7629P
LA7506



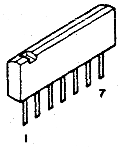
AN6551



TA7066PB,C

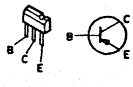


BA222V

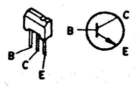


8 PIN

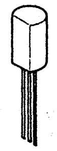
2SB643R,S
2SB644R,S



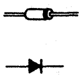
2SD638R, S
2SD639R, S
2SC2188
2SD636



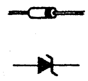
2SC2655O,Y



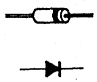
1SS133 YELLOW LINE
MA150 WHITE LINE



HZ15-3

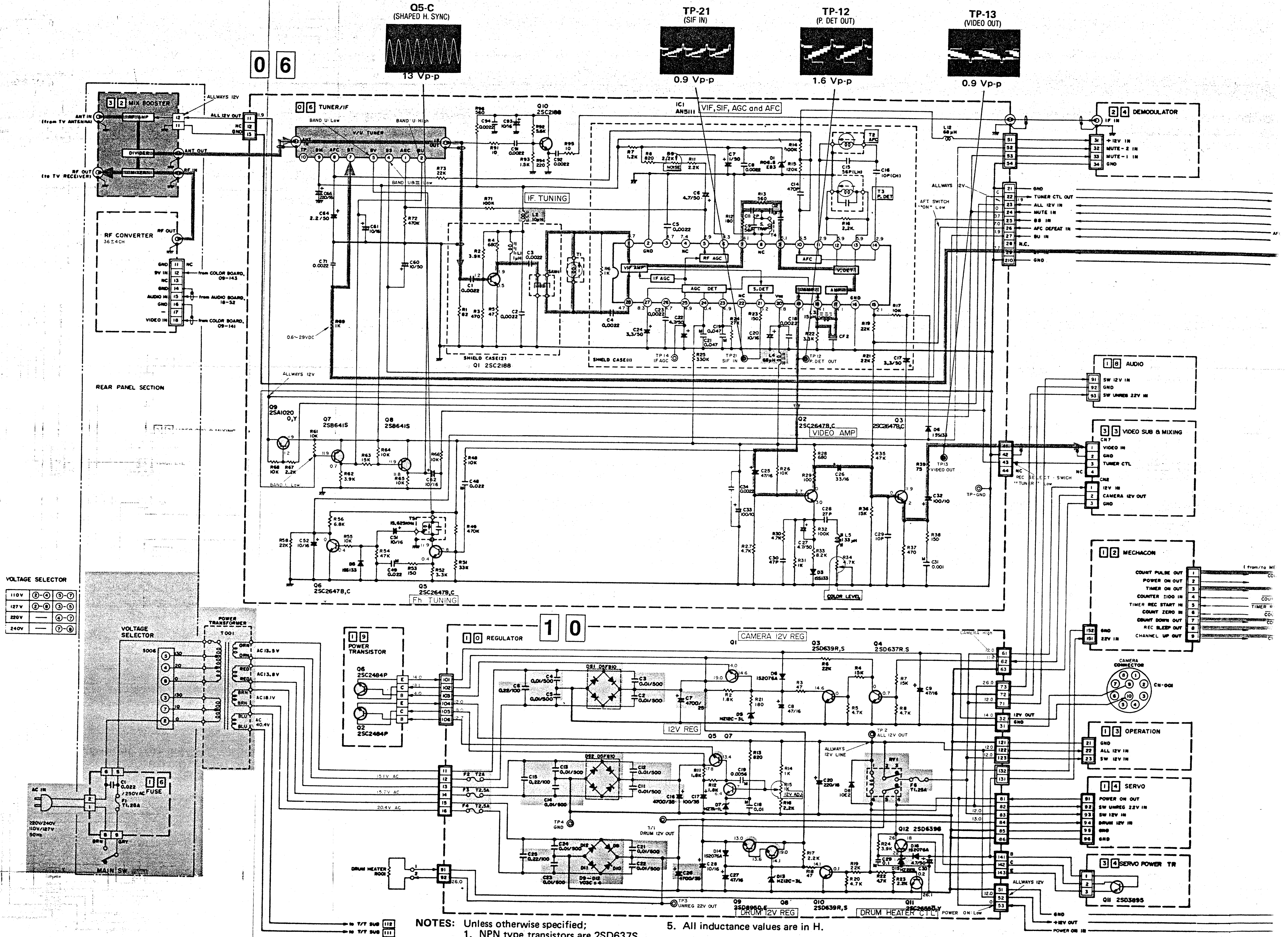


10E2



Regelnetzteil-, Tuner/ZF-, Tuner/Timer Steuer- und Anzeige-Schaltungen · Regulator, Tuner/IF, Tuner/Timer Control and Display circuits

10+06+07+08


Q5-C (SHAPED H. SYNC) 13 Vp-p
TP-21 (SIF IN) 0.9 Vp-p
TP-12 (P. DET OUT) 1.6 Vp-p
TP-13 (VIDEO OUT) 0.9 Vp-p
06
06 TUNER/IF
32 MIX BOOSTER
ANT IN (from TV ANTENNA)
RF OUT (to TV RECEIVER)
DIVIDER
ANT OUT
RF CONVERTER 36±4CH
REAR PANEL SECTION
V/U TUNER
IC1 AN5111
VIF, SIF, AGC and AFC
IF. TUNING
SHIELD CASE(2) Q1 2SC2188
SHIELD CASE(1)
Q10 2SC2188
Q9 2SA1020 O,Y
Q7 2SB641S
Q8 2SB641S
Q2 2SC2647B,C
Q3 2SC2647B,C
VIDEO AMP
COLOR LEVEL
Q6 2SC2647B,C
Q5 2SC2647B,C
Fh TUNING
24 DEMODULATOR
18 AUDIO
33 VIDEO SUB & MIXING
12 MECHACON
13 OPERATION
14 SERVO
34 SERVO POWER TR
Q11 2SD3895
VOLTAGE SELECTOR
110V ②-④ ⑤-⑦
127V ②-⑥ ③-⑤
220V — ④-⑦
240V — ⑦-⑧
POWER TRANSFORMER T001
19 POWER TRANSISTOR
Q6 2SC2484P
Q2 2SC2484P
10
10 REGULATOR
CAMERA 12V REG
12V REG
DRUM 12V REG
DRUM HEATER CTL
Q1
Q3 2SD639R,S
Q4 2SD637R,S
Q5 Q7
Q12 2SD6396
Q9 2SD8960,E
Q8
Q10 2SD639R,S
Q11 2SC2655O,Y
DS1 DSF810
DS2 DSF810
D9-D12 V03C×4
TP3 UNREG 22V OUT
TP4 GND
CAMERA CONNECTOR
16 FUSE
AC IN
220V/240V 110V/127V 50Hz
MAIN SW
DRUM HEATER R001
to T/T SUB 112
to T/T SUB 111
ALLWAYS 12V
POWER ON: Low

NOTES: Unless otherwise specified;

1. NPN type transistors are 2SD637S.
2. Diodes are 1SS133.
3. All resistance values are in ohms, 1/8 W. (Tuner/IF board : 1/6 W)
4. All capacitance values are in μF.
5. All inductance values are in H.

⊣⊢ ; Electrolytic

⊣⊢ ; Mylar

⊣⊢ ; Ceramic

Alle Gleichspannungen sind mit einem Digitalvoltmeter gemessen bei Aufnahme, () bei Wiedergabe.

All DC voltages are measured with a digital voltmeter at record mode, () at playback.

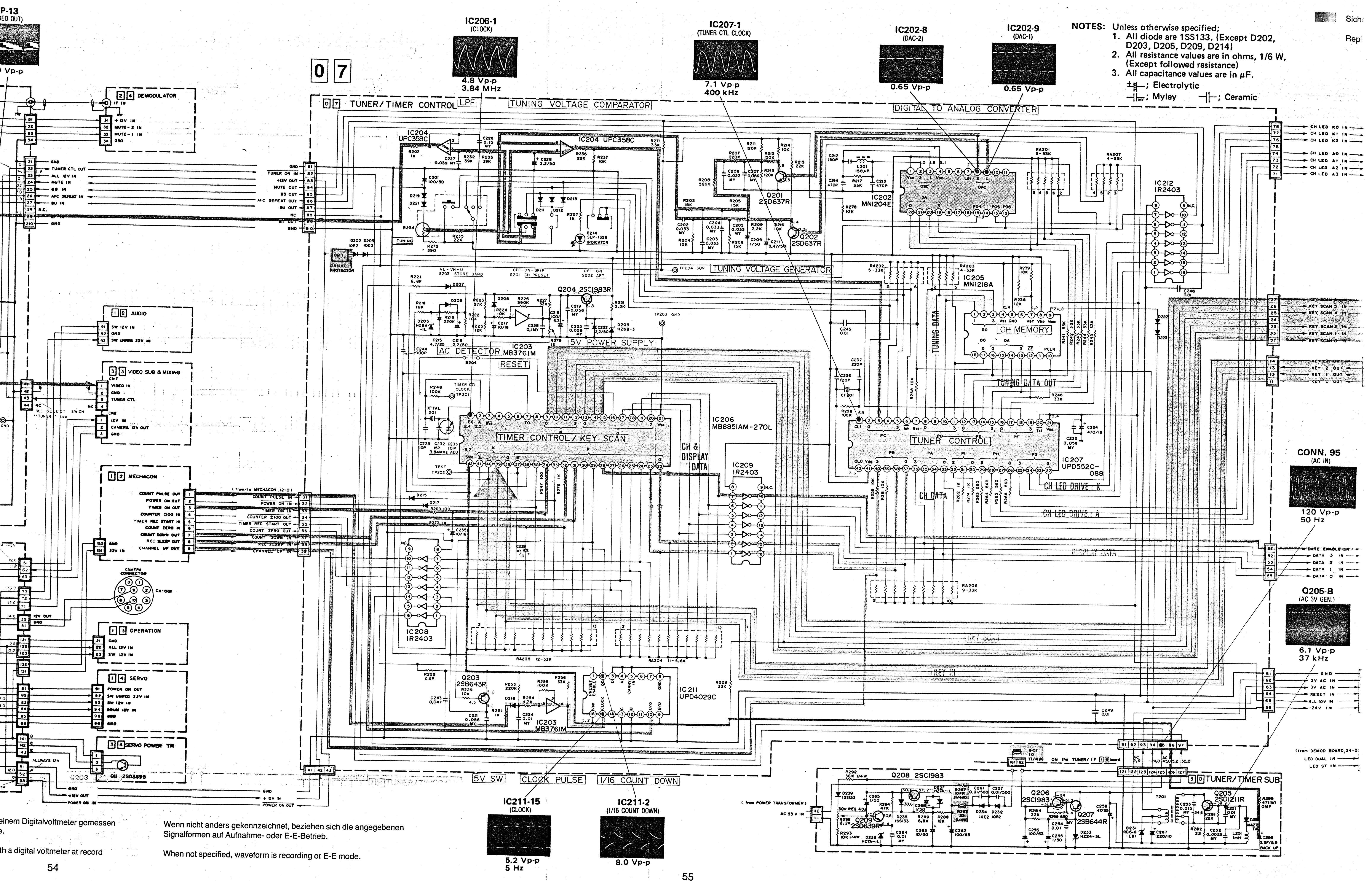
Wenn nicht anders gekenn

Signalformen auf Aufnahm

When not specified, wavef

NOTES: Unless otherwise specified;
1. All diode are 1SS133. (Except D202, D203, D205, D209, D214)
2. All resistance values are in ohms, 1/6 W, (Except followed resistance)
3. All capacitance values are in μF.

; Electrolytic
; Mylay ; Ceramic



P-13
(VIDEO OUT)
Vp-p
IC206-1
(CLOCK)
4.8 Vp-p
3.84 MHz
IC207-1
(TUNER CTL CLOCK)
7.1 Vp-p
400 kHz
IC202-8
(DAC-2)
0.65 Vp-p
IC202-9
(DAC-1)
0.65 Vp-p
0 7
0 7 TUNER/TIMER CONTROL
LPF
TUNING VOLTAGE COMPARATOR
DIGITAL TO ANALOG CONVERTER
2 4 DEMODULATOR
IC204 UPC358C
IC201 2SD637R
Q202 2SD637R
IC202 MN1204E
IC212 IR2403
TUNING VOLTAGE GENERATOR
CIRCUIT PROTECTOR
IC205 MN1218A
CH MEMORY
TUNING DATA
TUNING DATA OUT
1 8 AUDIO
3 3 VIDEO SUB & MIXING
Q204 2SC1983R
AC DETECTOR
IC203 MB3761M
RESET
5V POWER SUPPLY
IC206 MB8851AM-270L
TIMER CONTROL/KEY SCAN
CH & DISPLAY DATA
IC209 IR2403
TUNER CONTROL
IC207 UPD552C-088
CH LED DRIVE : K
CH LED DRIVE : A
CH DATA
1 2 MECHACON
CAMERA CONNECTOR
CN-001
IC208 IR2403
DISPLAY DATA
KEY SCAN
KEY IN
1 3 OPERATION
1 4 SERVO
3 4 SERVO POWER TR
Q203 2SB643R
IC211 UPD4029C
IC203 MB3761M
5V SW
CLOCK PULSE
1/16 COUNT DOWN
Q208 2SC1983
Q206 2SC1983
Q207 2SB644R
Q209 2SD639R
Q205 2SD1211R
3 0 TUNER/TIMER SUB
CONN. 95
(AC IN)
120 Vp-p
50 Hz
Q205-B
(AC 3V GEN.)
6.1 Vp-p
37 kHz
IC211-15
(CLOCK)
5.2 Vp-p
5 Hz
IC211-2
(1/16 COUNT DOWN)
8.0 Vp-p

einem Digitalvoltmeter gemessen
e.

th a digital voltmeter at record

Wenn nicht anders gekennzeichnet, beziehen sich die angegebenen Signalformen auf Aufnahme- oder E-E-Betrieb.

When not specified, waveform is recording or E-E mode.

▨ Sicherheitsbauteile nur gegen Original-Ersatzteile auswechseln!

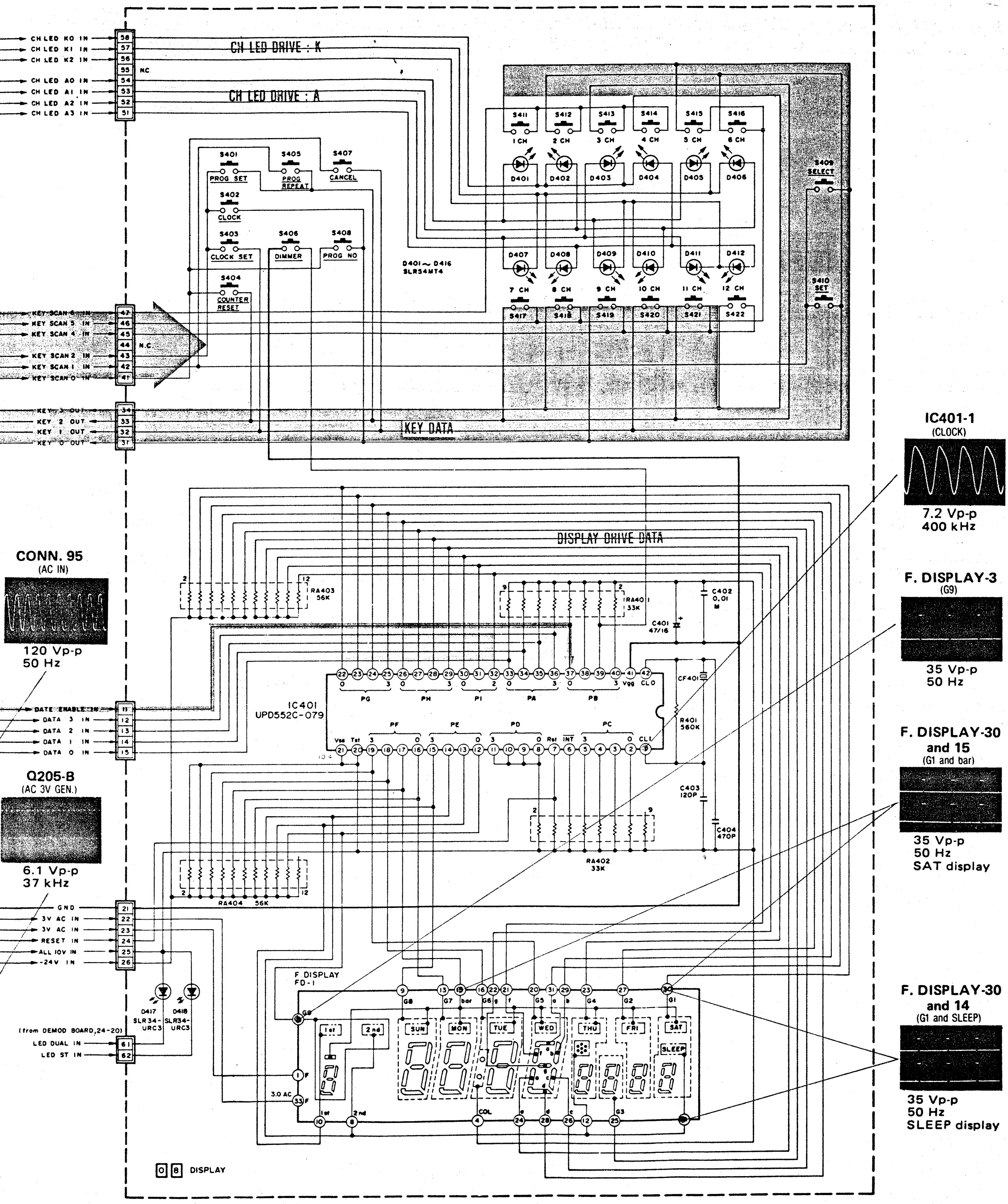
Replace safety components only with original spare parts!

NOTES: Unless otherwise specified;

1. D401–D412 are SLR54MT4.
   D417, 418 are SLR34URC3
2. All resistance values are in ohms, 1/8 W.
3. All capacitance values are in μF.

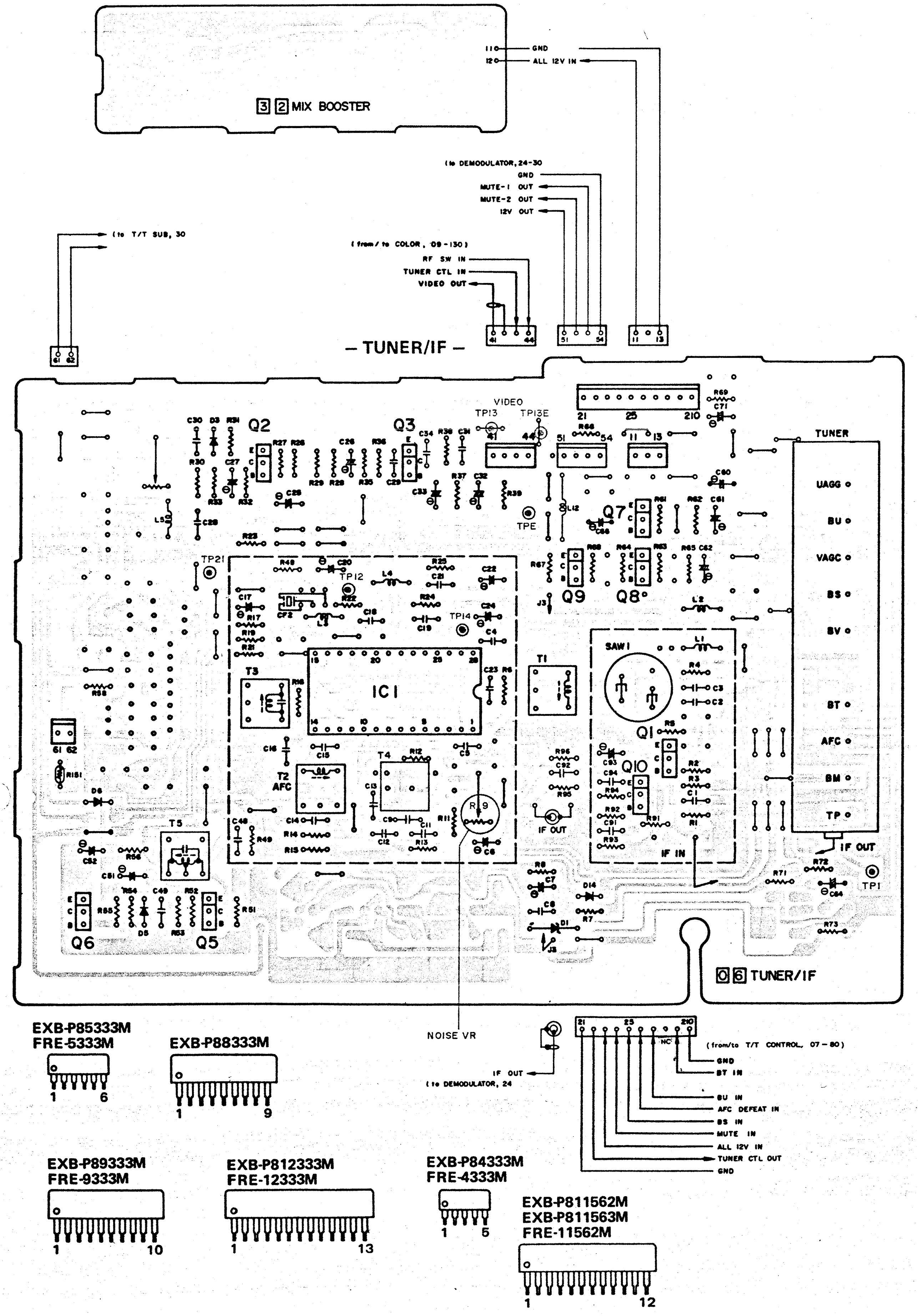
±╫ ; Electrolytic
─┤├─ MY ; Mylar ─┤├─ ; Ceramic

0 8

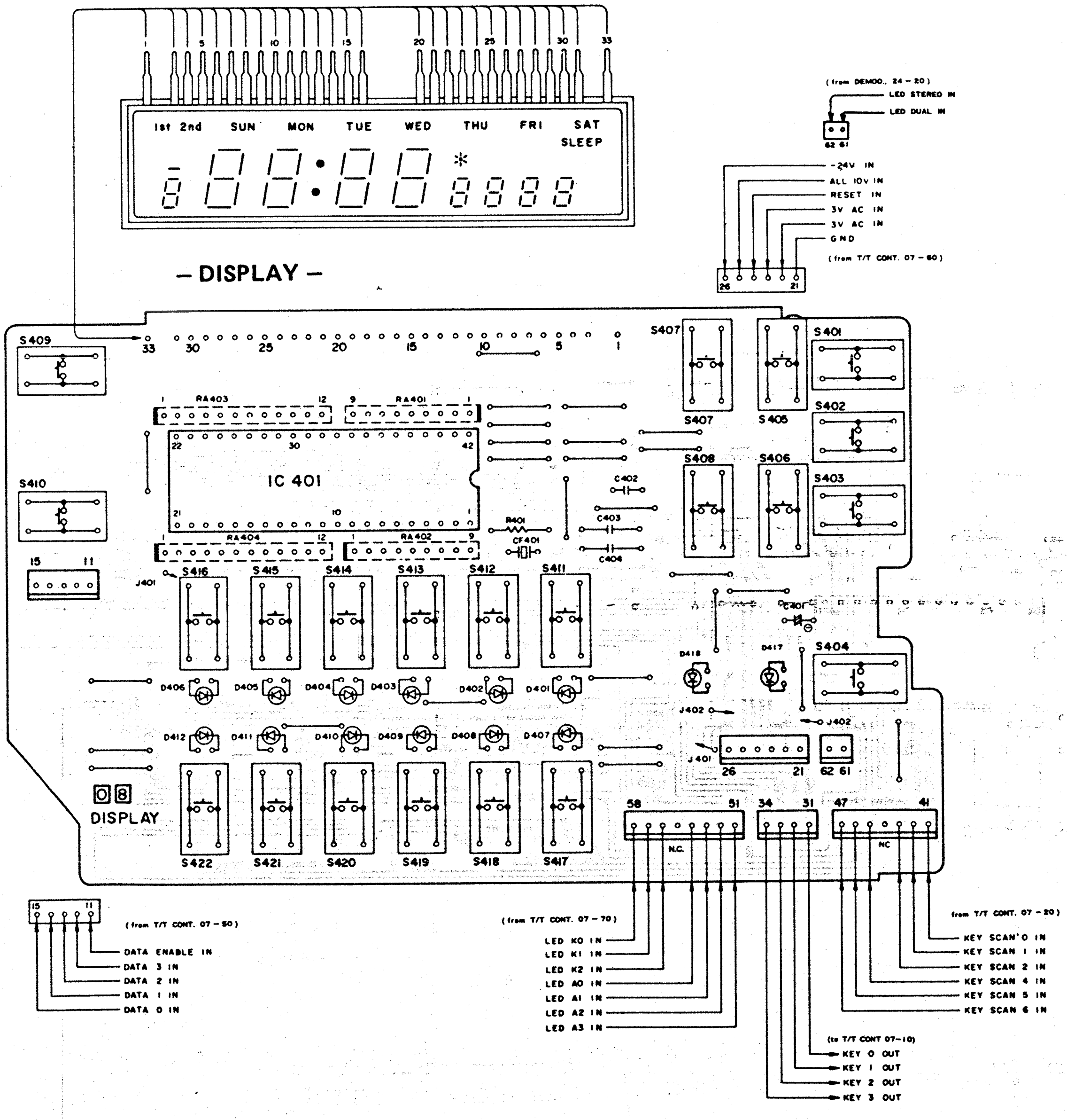


CH LED K0 IN
CH LED K1 IN
CH LED K2 IN
CH LED A0 IN
CH LED A1 IN
CH LED A2 IN
CH LED A3 IN
58
57
56
55
N.C.
54
53
52
51
CH LED DRIVE : K
CH LED DRIVE : A
S411
S412
S413
S414
S415
S416
1 CH
2 CH
3 CH
4 CH
5 CH
6 CH
D401
D402
D403
D404
D405
D406
S401
PROG SET
S405
PROG REPEAT
S407
CANCEL
S402
CLOCK
S403
CLOCK SET
S406
DIMMER
S408
PROG NO
S404
COUNTER RESET
D401 ~ D416
SLR54MT4
S409
SELECT
S410
SET
D407
D408
D409
D410
D411
D412
7 CH
8 CH
9 CH
10 CH
11 CH
12 CH
S417
S418
S419
S420
S421
S422
KEY SCAN 6 IN
KEY SCAN 5 IN
KEY SCAN 4 IN
KEY SCAN 2 IN
KEY SCAN 1 IN
KEY SCAN 0 IN
47
46
45
44
N.C.
43
42
41
KEY 3 OUT
KEY 2 OUT
KEY 1 OUT
KEY 0 OUT
34
33
32
31
KEY DATA
DISPLAY DRIVE DATA
RA403
56K
RA401
33K
C402
0.01
M
C401
47/16
CF401
R401
560K
IC401
UPD552C-079
PG
PH
PI
PA
PB
PF
PE
PD
PC
Vgg
CLO
Vss
Tst
Rst
INT
CL1
C403
120P
C404
470P
RA402
33K
RA404 56K
DATE ENABLE IN
DATA 3 IN
DATA 2 IN
DATA 1 IN
DATA 0 IN
11
12
13
14
15
GND
3V AC IN
3V AC IN
RESET IN
ALL 10V IN
-24V IN
21
22
23
24
25
26
D417
SLR34-URC3
D418
SLR34-URC3
(from DEMOD BOARD, 24-20)
LED DUAL IN
LED ST IN
61
62
F DISPLAY
FD-1
G9
G8
G7
bar
G6
g
f
G5
a
b
G4
G2
G1
1st
2nd
SUN
MON
TUE
WED
THU
FRI
SAT
SLEEP
F
3.0 AC
COL
e
d
c
G3
0 8 DISPLAY
CONN. 95
(AC IN)
120 Vp-p
50 Hz
Q205-B
(AC 3V GEN.)
6.1 Vp-p
37 kHz
IC401-1
(CLOCK)
7.2 Vp-p
400 kHz
F. DISPLAY-3
(G9)
35 Vp-p
50 Hz
F. DISPLAY-30
and 15
(G1 and bar)
35 Vp-p
50 Hz
SAT display
F. DISPLAY-30
and 14
(G1 and SLEEP)
35 Vp-p
50 Hz
SLEEP display

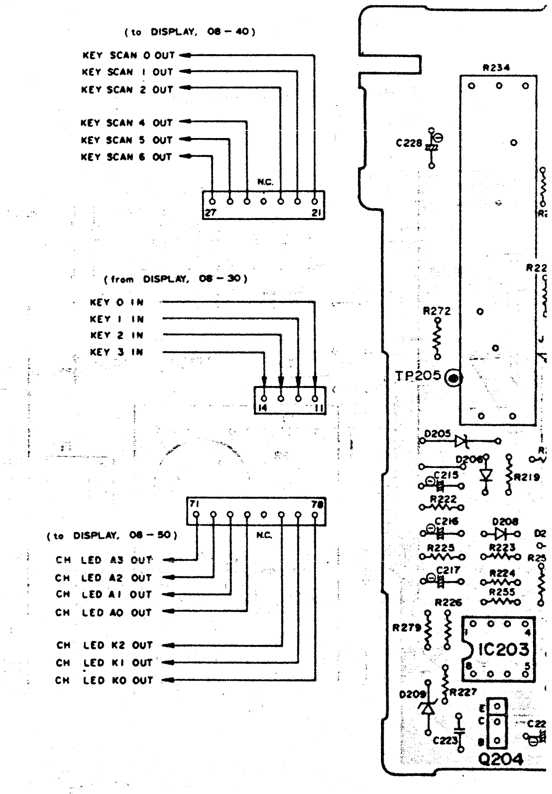
Tuner/ZF-Platte · Tuner/IF circuit board 0 6

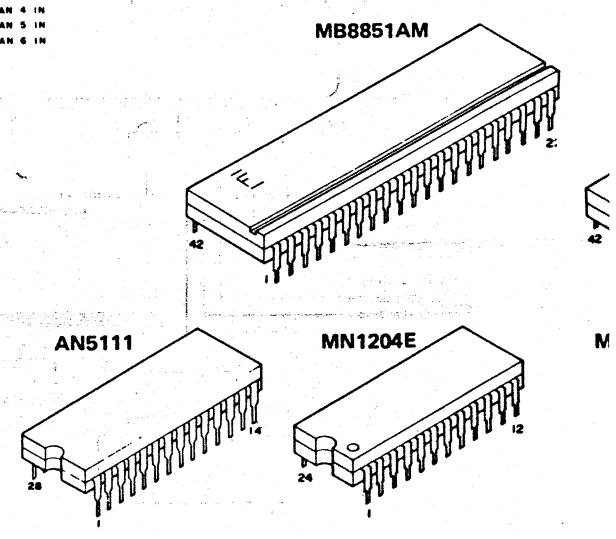

3 2 MIX BOOSTER
GND
ALL 12V IN
(to DEMODULATOR, 24-30
GND
MUTE-1 OUT
MUTE-2 OUT
12V OUT
(to T/T SUB, 30
(from/to COLOR, 09-130)
RF SW IN
TUNER CTL IN
VIDEO OUT
– TUNER/IF –
Q2
Q3
Q7
Q9
Q8
T1
T3
T2 AFC
T4
T5
Q1
Q10
Q6
Q5
IC1
SAW1
TUNER
UAGG
BU
VAGC
BS
BV
BT
AFC
BM
TP
IF OUT
TP1
TP21
TP12
TP13
TP14
TPE
VIDEO
IF OUT
IF IN
0 6 TUNER/IF
NOISE VR
IF OUT
(to DEMODULATOR, 24
(from/to T/T CONTROL, 07-80)
GND
BT IN
BU IN
AFC DEFEAT IN
BS IN
MUTE IN
ALL 12V IN
TUNER CTL OUT
GND
EXB-P85333M
FRE-5333M
EXB-P88333M
EXB-P89333M
FRE-9333M
EXB-P812333M
FRE-12333M
EXB-P84333M
FRE-4333M
EXB-P811562M
EXB-P811563M
FRE-11562M

Anzeige-Platte · Display circuit board 0 8


1st 2nd SUN MON TUE WED THU FRI SAT
SLEEP
(from DEMOD. 24-20)
LED STEREO IN
LED DUAL IN
-24V IN
ALL 10V IN
RESET IN
3V AC IN
3V AC IN
GND
(from T/T CONT. 07-60)
– DISPLAY –
IC 401
RA401
RA402
RA403
RA404
CF401
0 8
DISPLAY
(from T/T CONT. 07-50)
DATA ENABLE IN
DATA 3 IN
DATA 2 IN
DATA 1 IN
DATA 0 IN
(from T/T CONT. 07-70)
LED K0 IN
LED K1 IN
LED K2 IN
LED A0 IN
LED A1 IN
LED A2 IN
LED A3 IN
from T/T CONT. 07-20)
KEY SCAN 0 IN
KEY SCAN 1 IN
KEY SCAN 2 IN
KEY SCAN 4 IN
KEY SCAN 5 IN
KEY SCAN 6 IN
(to T/T CONT 07-10)
KEY 0 OUT
KEY 1 OUT
KEY 2 OUT
KEY 3 OUT

Tuner/Timer-Steuerplatte · Tu

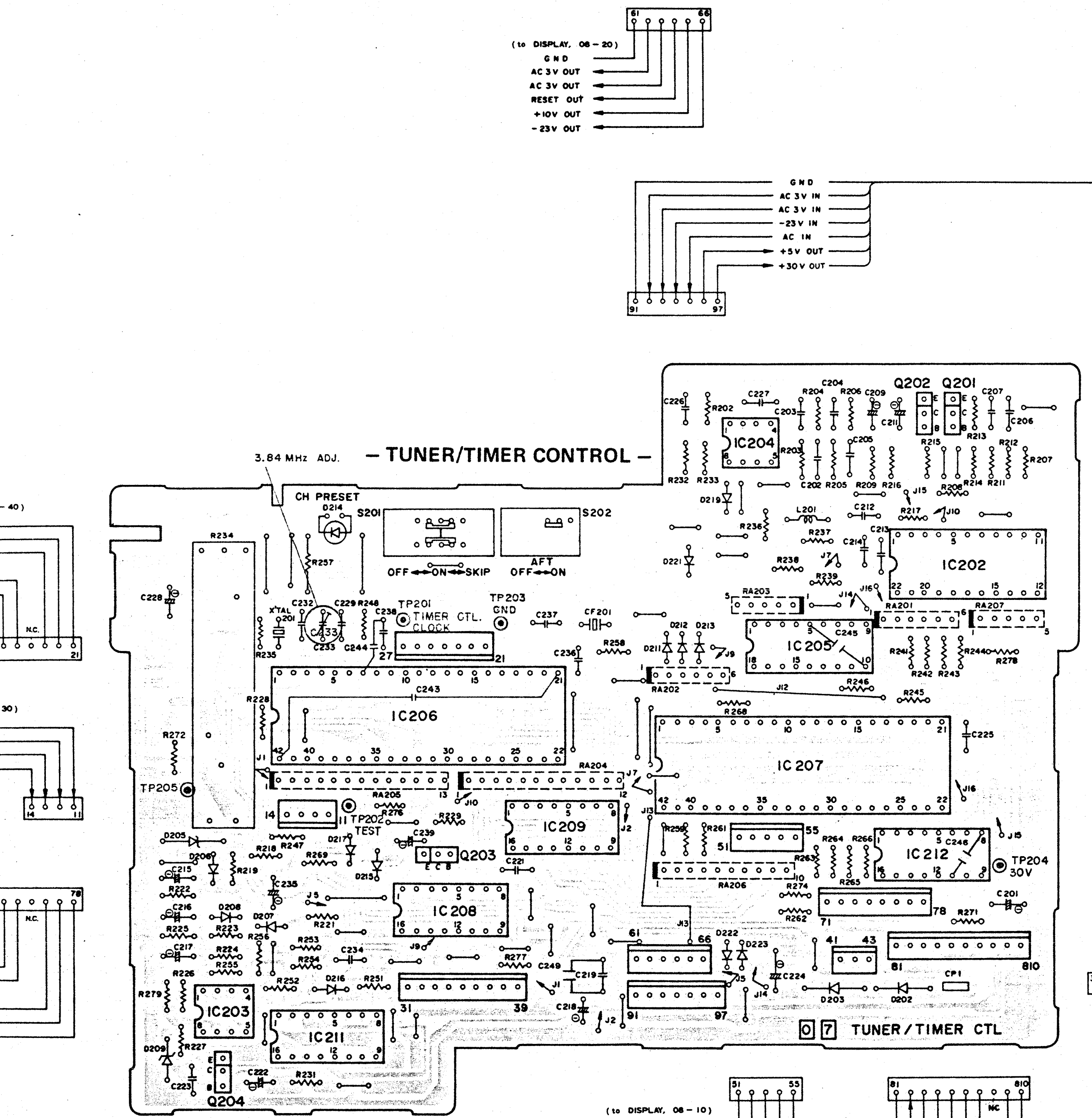

(to DISPLAY, 08-40)
KEY SCAN 0 OUT
KEY SCAN 1 OUT
KEY SCAN 2 OUT
KEY SCAN 4 OUT
KEY SCAN 5 OUT
KEY SCAN 6 OUT
(from DISPLAY, 08-30)
KEY 0 IN
KEY 1 IN
KEY 2 IN
KEY 3 IN
(to DISPLAY, 08-50)
CH LED A3 OUT
CH LED A2 OUT
CH LED A1 OUT
CH LED A0 OUT
CH LED K2 OUT
CH LED K1 OUT
CH LED K0 OUT
IC203
Q204
TP205

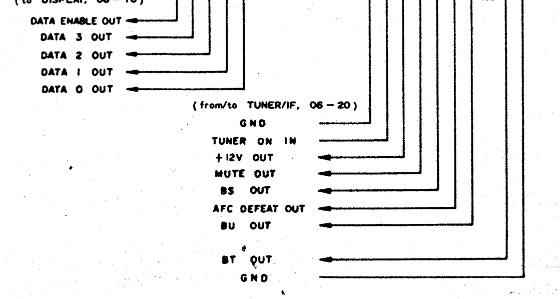

MB8851AM
AN5111
MN1204E

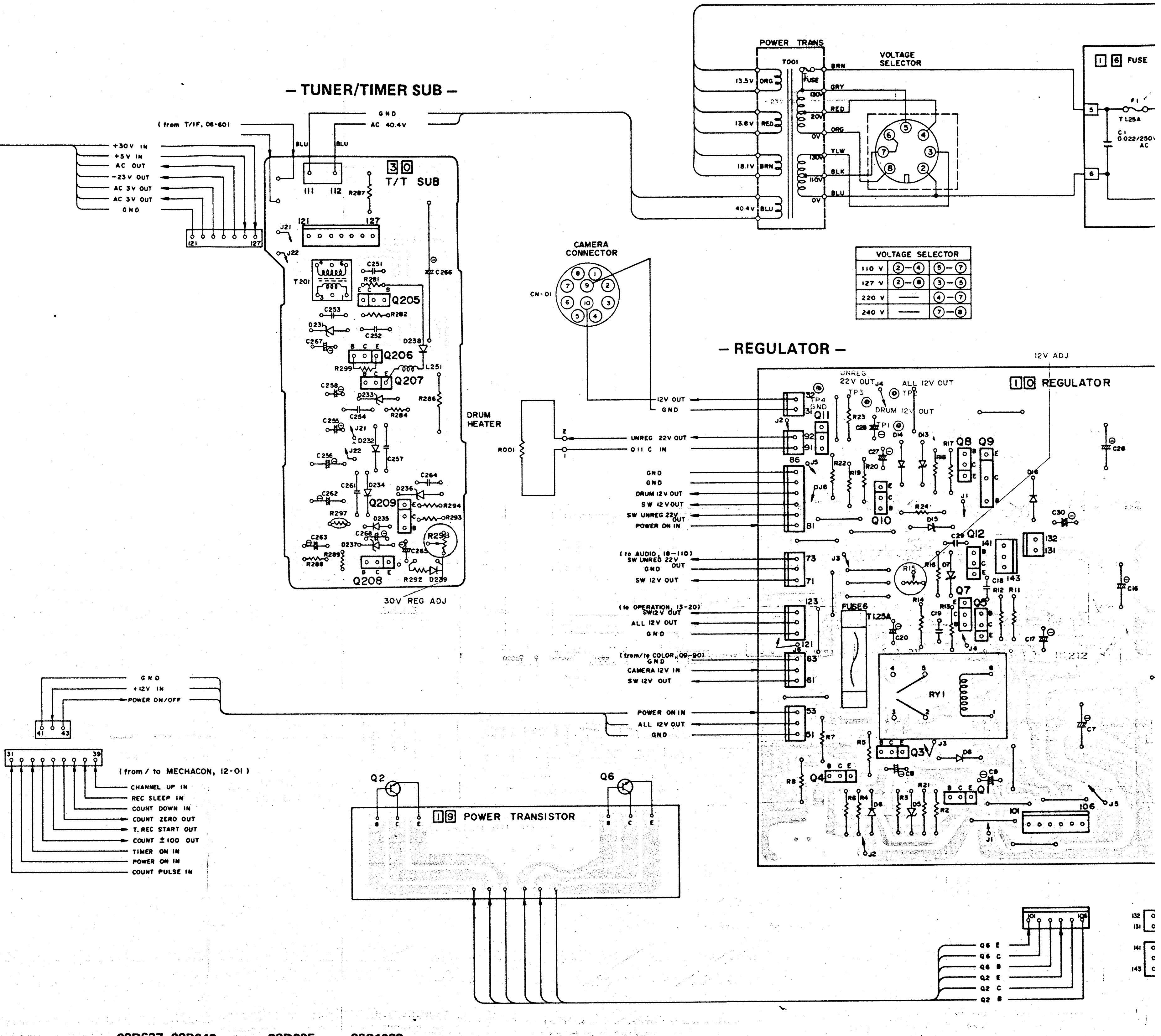
r-Steuerplatte · Tuner/Timer Control circuit board 0 7

Tuner/Timer-Zusatzplatte · Tuner/Timer Sub circuit board 3 0

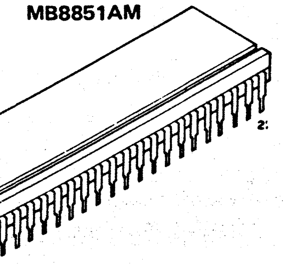
Regelnetzteil-Platte · Regulator ci


61
66
(to DISPLAY, 08-20)
GND
AC 3V OUT
AC 3V OUT
RESET OUT
+10V OUT
-23V OUT
GND
AC 3V IN
AC 3V IN
-23V IN
AC IN
+5V OUT
+30V OUT
91
97
- TUNER/TIMER CONTROL -
3.84 MHz ADJ.
CH PRESET
S201
S202
OFF ON SKIP
AFT
OFF ON
TP201
TIMER CTL.
CLOCK
TP203
GND
TP202
TEST
TP204
30V
TP205
X'TAL
Q202
Q201
Q203
Q204
IC202
IC203
IC204
IC205
IC206
IC207
IC208
IC209
IC211
IC212
RA201
RA202
RA203
RA204
RA205
RA206
RA207
CF201
L201
CP1
N.C.
0 7 TUNER/TIMER CTL

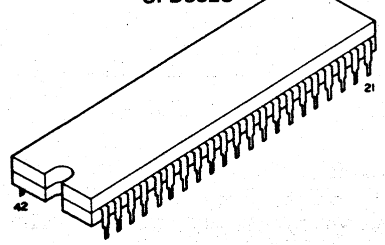

51
55
(to DISPLAY, 08-10)
DATA ENABLE OUT
DATA 3 OUT
DATA 2 OUT
DATA 1 OUT
DATA 0 OUT
81
810
NC
(from/to TUNER/IF, 06-20)
GND
TUNER ON IN
+12V OUT
MUTE OUT
BS OUT
AFC DEFEAT OUT
BU OUT
BT OUT
GND


- TUNER/TIMER SUB -
(from T/IF, 06-60)
GND
AC 40.4V
BLU
BLU
+30V IN
+5V IN
AC OUT
-23V OUT
AC 3V OUT
AC 3V OUT
GND
121
127
3 0
T/T SUB
111
112
T201
Q205
Q206
Q207
Q208
Q209
30V REG ADJ
GND
+12V IN
POWER ON/OFF
41
43
31
39
(from / to MECHACON, 12-01)
CHANNEL UP IN
REC SLEEP IN
COUNT DOWN IN
COUNT ZERO OUT
T. REC START OUT
COUNT ±100 OUT
TIMER ON IN
POWER ON IN
COUNT PULSE IN
CAMERA CONNECTOR
CN-01
DRUM HEATER
R001
POWER TRANS
T001
FUSE
13.5V
13.8V
18.1V
40.4V
ORG
RED
BRN
BLU
GRY
YLW
BLK
130V
20V
0V
110V
VOLTAGE SELECTOR
1 6 FUSE
F1
T L25A
C1
0.022/250V AC
VOLTAGE SELECTOR
110 V ②-④ ⑤-⑦
127 V ②-⑧ ③-⑤
220 V — ④-⑦
240 V — ⑦-⑧
- REGULATOR -
12V ADJ
1 0 REGULATOR
UNREG 22V OUT
ALL 12V OUT
DRUM 12V OUT
12V OUT
GND
UNREG 22V OUT
Q11 C IN
GND
GND
DRUM 12V OUT
SW 12V OUT
SW UNREG 22V OUT
POWER ON IN
(to AUDIO, 18-110)
SW UNREG 22V OUT
GND
SW 12V OUT
(to OPERATION, 13-20)
SW12V OUT
ALL 12V OUT
GND
(from/to COLOR, 09-90)
GND
CAMERA 12V IN
SW 12V OUT
POWER ON IN
ALL 12V OUT
GND
FUSE6
T125A
RY1
Q2
Q6
1 9 POWER TRANSISTOR
B C E
B C E
101
106
Q6 E
Q6 C
Q6 B
Q2 E
Q2 C
Q2 B

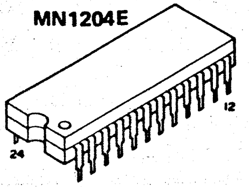
MB8851AM



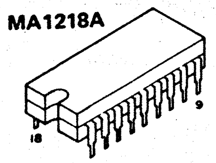
UPD552C



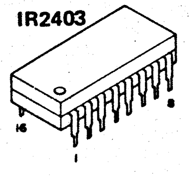
MN1204E



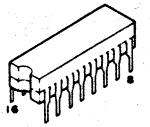
MA1218A



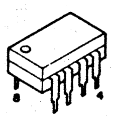
IR2403



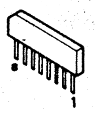
UPD4029C



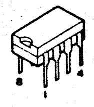
MB3761M



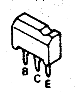
UPC1391H



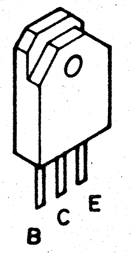
UPC358C



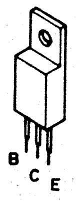
2SD637, 2SB643,
2SB644, 2SD639,
2SC2188, 2SC2647,
2SB641



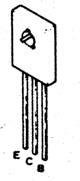
2SD895



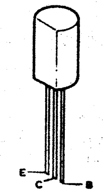
2SC1983



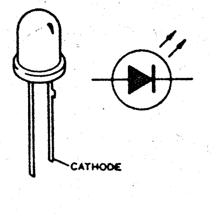
2SD1211



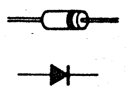
2SC2655,
2SA1020



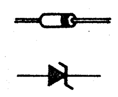
TLS124, SLR34URC3
SLP-135B, SLR54MT4



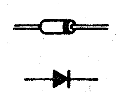
10E2



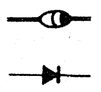
HZ SERCES,
RD6.8EB3,
RD6.8EB1



1SS133,
1S2076A,
MA27TA



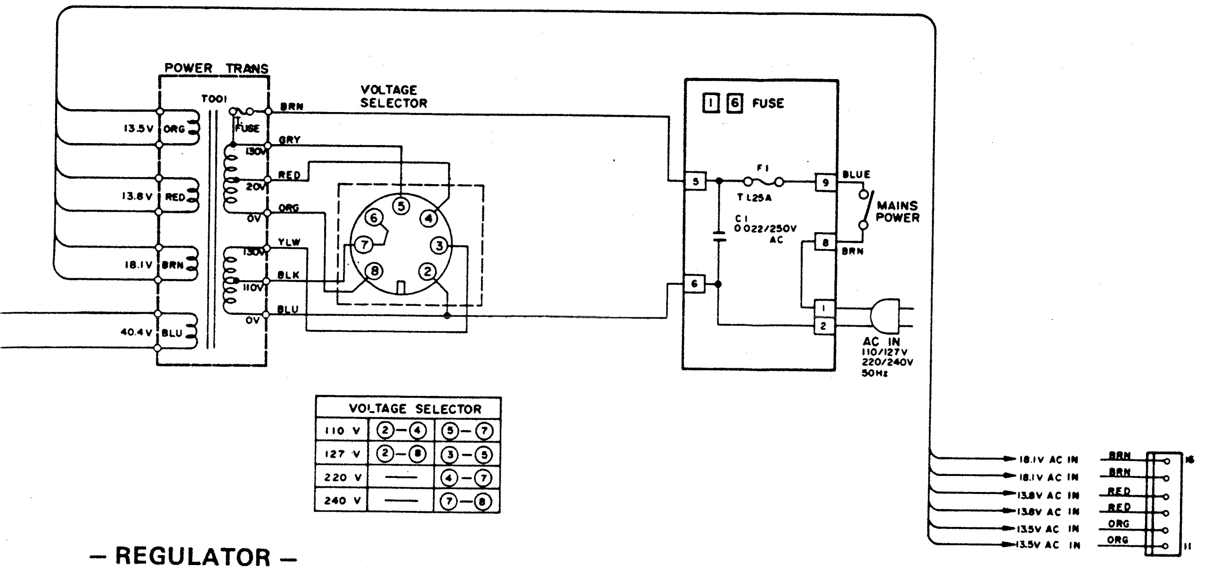
V03C



0

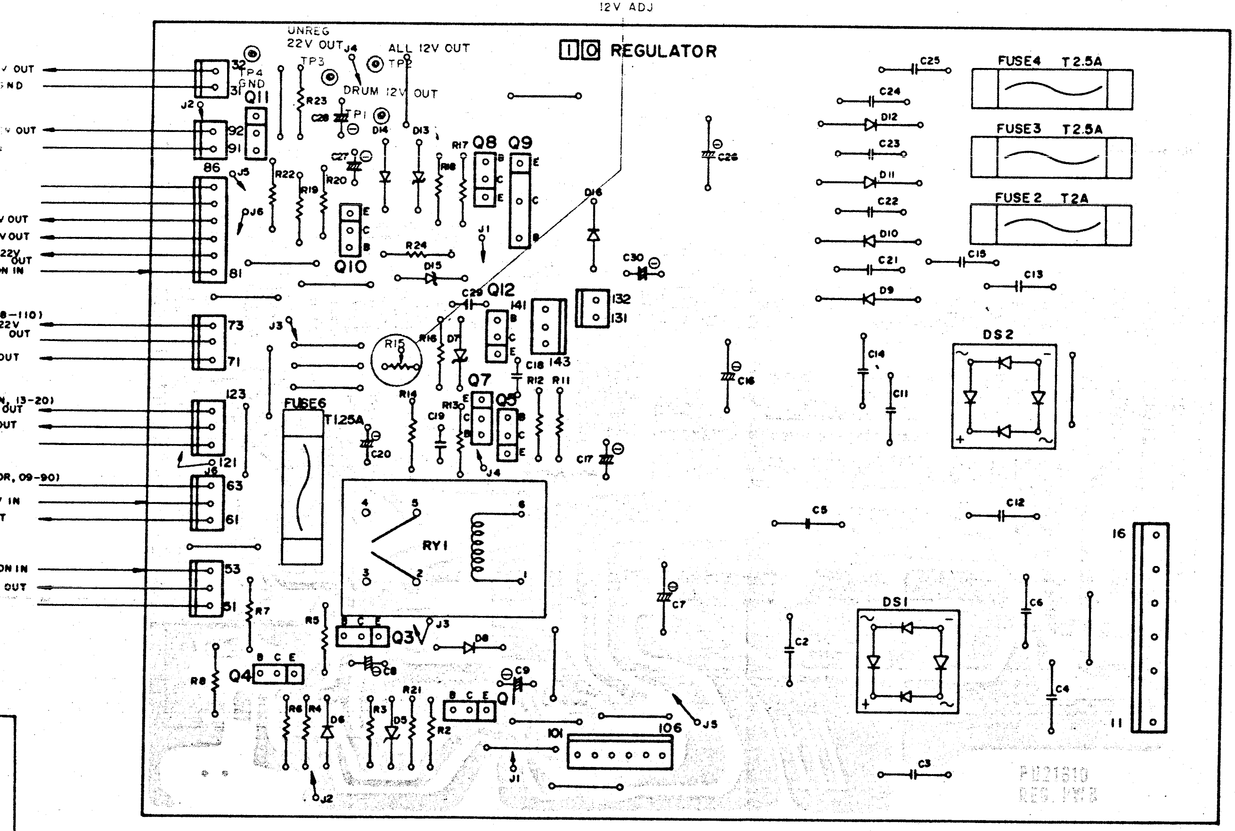
Regelnetzteil-Platte · Regulator circuit board

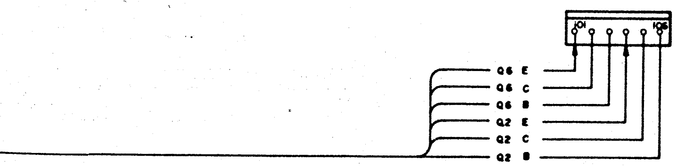
1 0


POWER TRANS
T001
FUSE
13.5V ORG
13.8V RED
18.1V BRN
40.4V BLU
130V
20V
0V
110V
BRN
GRY
RED
ORG
YLW
BLK
BLU
VOLTAGE SELECTOR
1 6 FUSE
F1
T L25A
C1
0.022/250V AC
BLUE
MAINS POWER
BRN
AC IN
110/127V
220/240V
50Hz
18.1V AC IN
18.1V AC IN
13.8V AC IN
13.8V AC IN
13.5V AC IN
13.5V AC IN
BRN
BRN
RED
RED
ORG
ORG
16
11

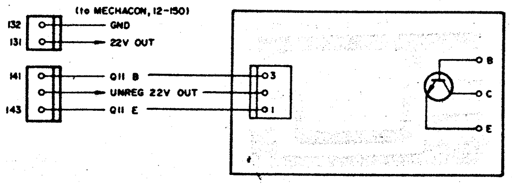
VOLTAGE SELECTOR		
110 V	②—④	⑤—⑦
127 V	②—⑧	③—⑤
220 V	——	④—⑦
240 V	——	⑦—⑧

– REGULATOR –

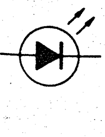

12V ADJ
1 0 REGULATOR
UNREG 22V OUT
ALL 12V OUT
DRUM 12V OUT
TP1
TP2
TP3
TP4 GND
J2
J4
J5
J6
J1
J3
Q11
Q10
Q8
Q9
Q12
Q7
Q5
Q3
Q4
Q1
FUSE6
T125A
RY1
FUSE4 T2.5A
FUSE3 T2.5A
FUSE2 T2A
DS2
DS1
16
11
101
106
R15
PU21810
REG. PWB
V OUT
GND
V OUT
V OUT
V OUT
22V OUT
ON IN
8-110)
22V OUT
OUT
, 13-20)
OUT
OUT
OR, 09-90)
V IN
T
ON IN
OUT


101
106
Q6 E
Q6 C
Q6 B
Q2 E
Q2 C
Q2 B

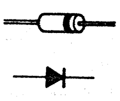
3 4 SERVO POWER TRANSISTOR


(to MECHACON, 12-150)
132
131
GND
22V OUT
141
143
Q11 B
UNREG 22V OUT
Q11 E
3
1
B
C
E

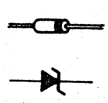
SLR34URC3
SLR54MT4



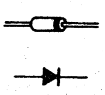
10E2



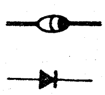
HZ SERCES, RD6.8EB3, RD6.8EB1



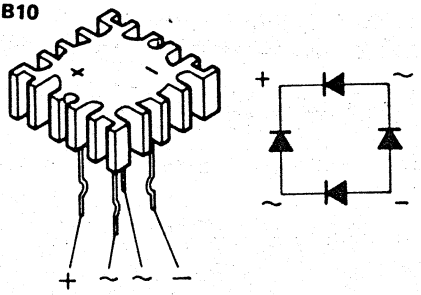
1SS133, 1S2076A, MA27TA



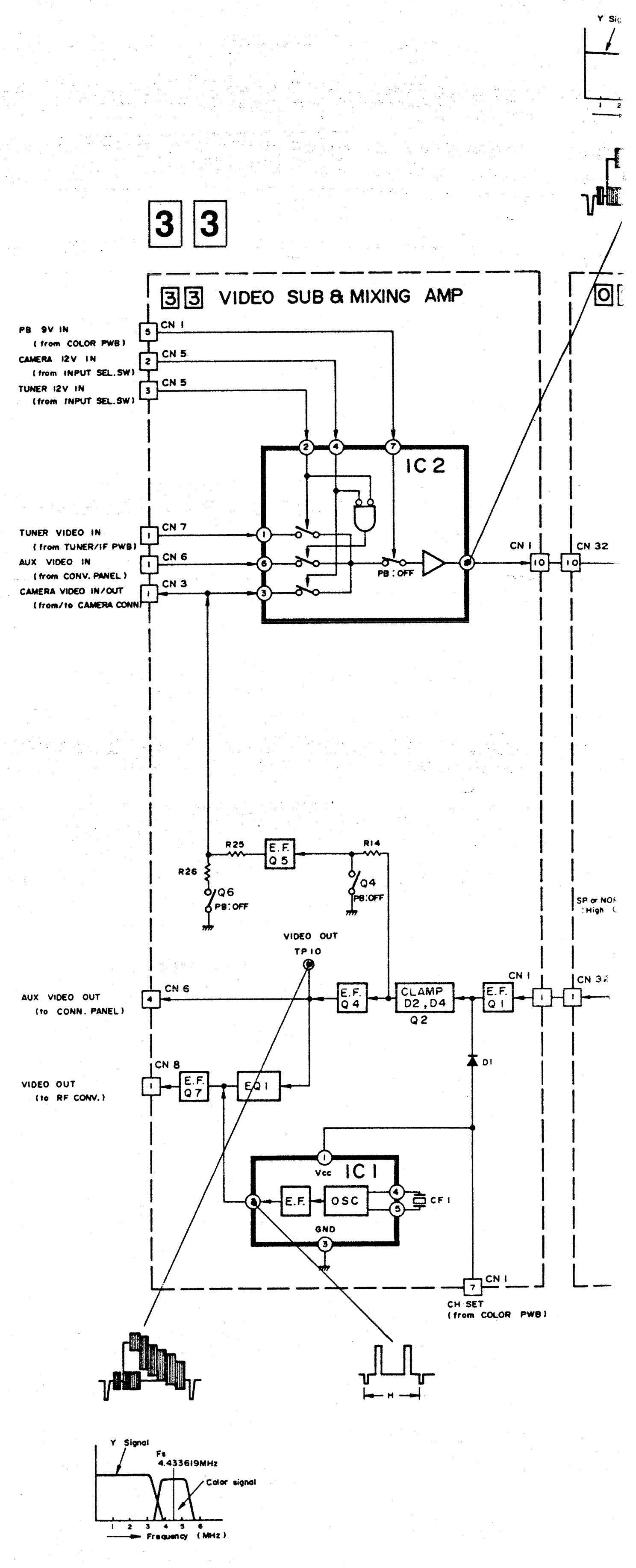
V03C



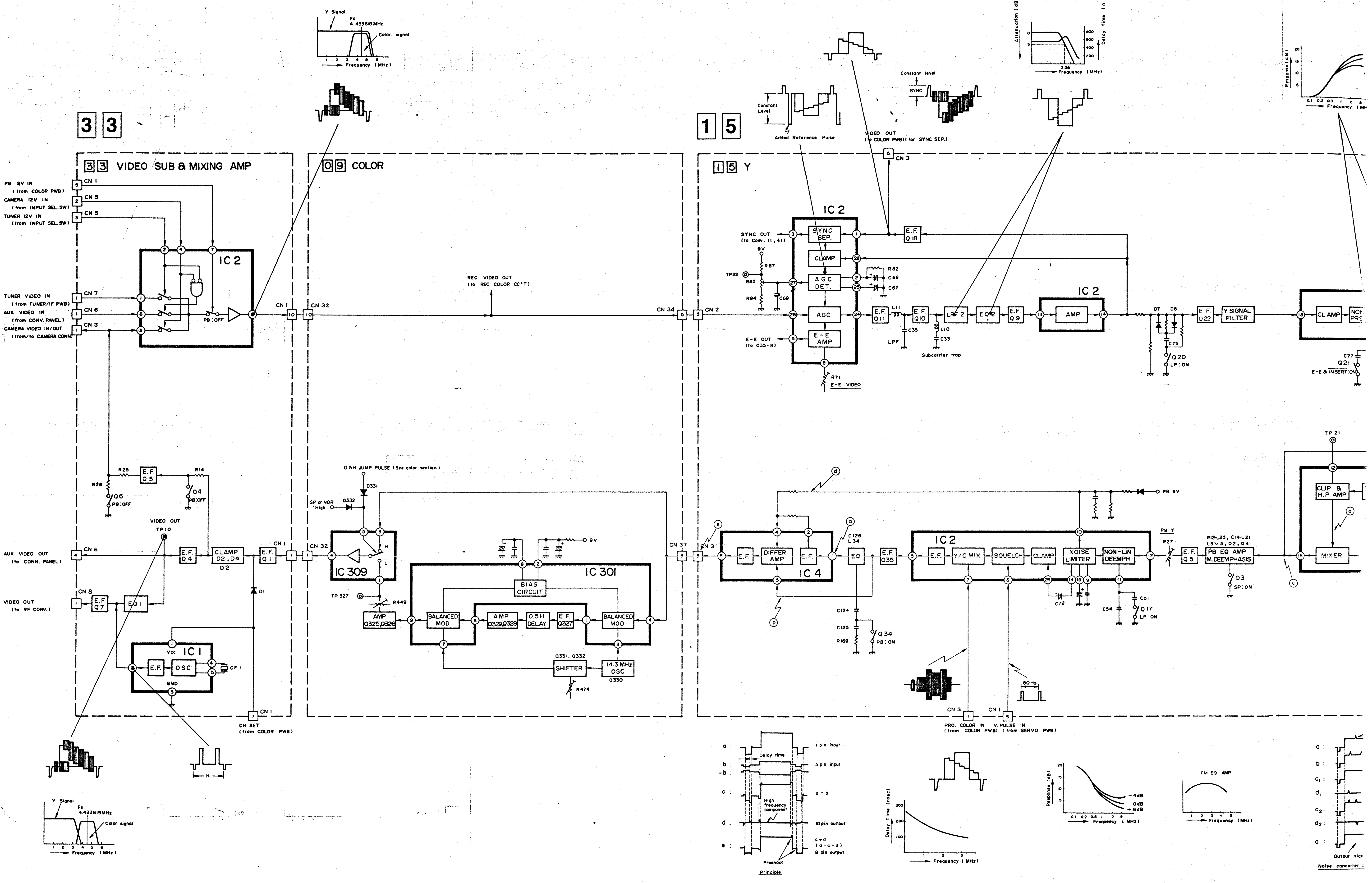
D5FB10



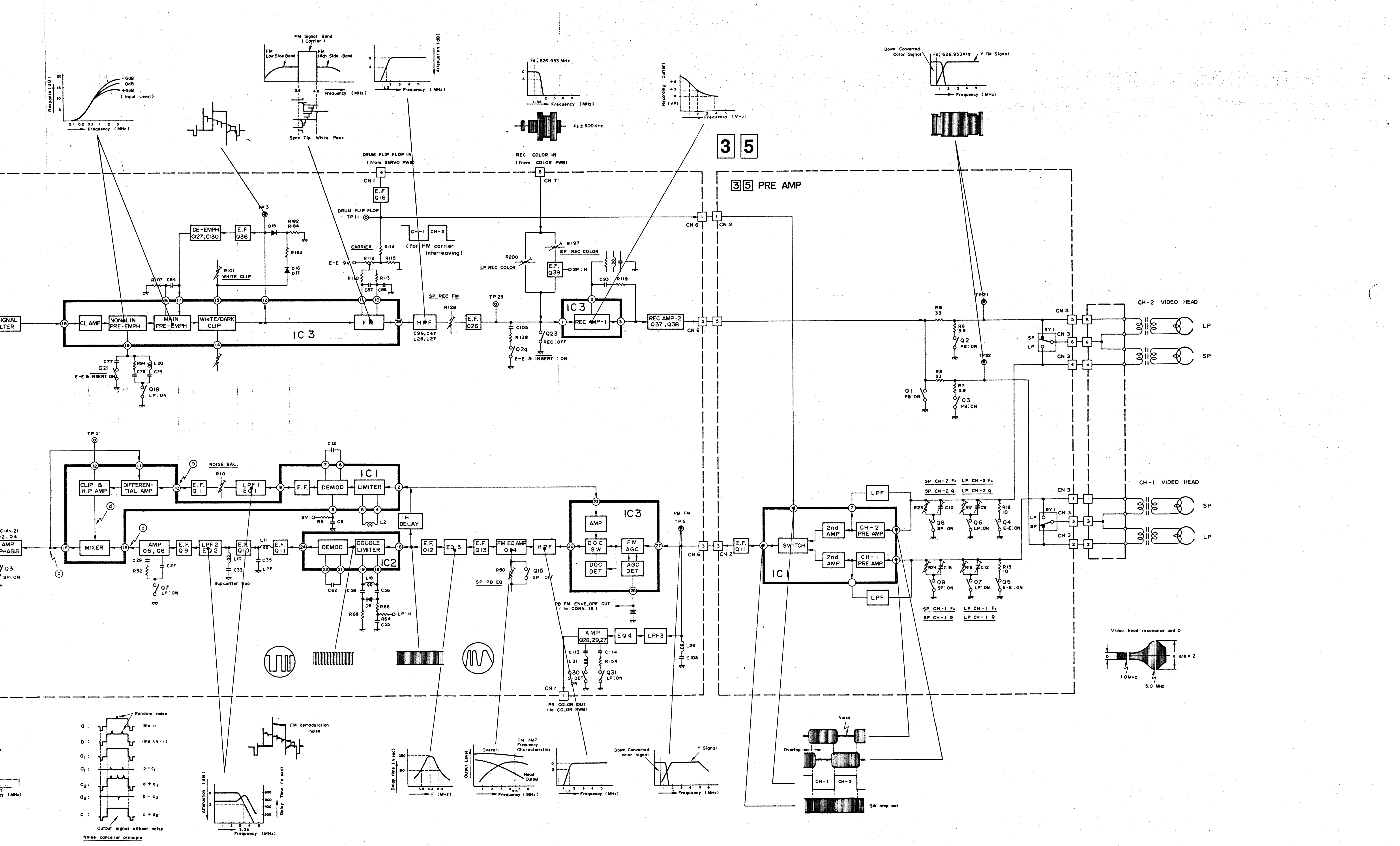
Luminanzsignal Blockschaltbild ·


3 3
3 3 VIDEO SUB & MIXING AMP
PB 9V IN (from COLOR PWB)
CAMERA 12V IN (from INPUT SEL.SW)
TUNER 12V IN (from INPUT SEL.SW)
CN 1
CN 5
CN 5
IC 2
TUNER VIDEO IN (from TUNER/IF PWB)
AUX VIDEO IN (from CONV. PANEL)
CAMERA VIDEO IN/OUT (from/to CAMERA CONN)
CN 7
CN 6
CN 3
PB : OFF
CN 1
CN 32
R25
E.F. Q5
R14
R26
Q6
PB:OFF
Q4
PB:OFF
VIDEO OUT
TP 10
AUX VIDEO OUT (to CONN. PANEL)
CN 6
E.F. Q4
CLAMP D2, D4
Q2
E.F. Q1
CN 1
CN 32
D1
VIDEO OUT (to RF CONV.)
CN 8
E.F. Q7
EQ 1
IC 1
Vcc
E.F.
OSC
GND
CF 1
CN 1
CH SET (from COLOR PWB)
SP or NO
:High
H
Y Signal
Fs 4.433619MHz
Color signal
1 2 3 4 5 6
Frequency (MHz)

Luminanzsignal Blockschaltbild · Luminance signal block diagram

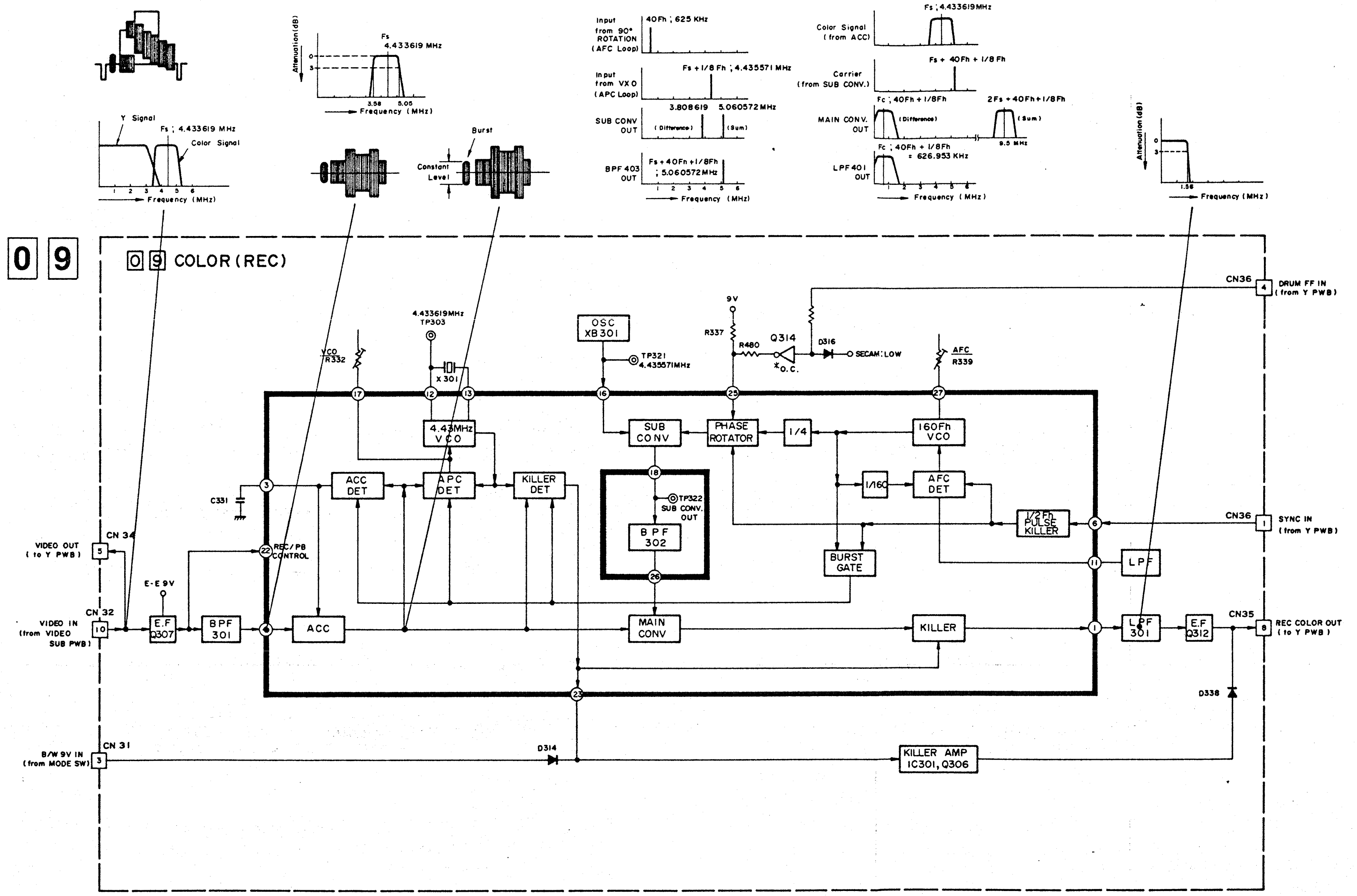


33
33 VIDEO SUB & MIXING AMP
PB 9V IN (from COLOR PWB)
CAMERA 12V IN (from INPUT SEL.SW)
TUNER 12V IN (from INPUT SEL.SW)
CN 1
CN 5
CN 5
IC 2
TUNER VIDEO IN (from TUNER/IF PWB)
AUX VIDEO IN (from CONV. PANEL)
CAMERA VIDEO IN/OUT (from/to CAMERA CONN)
CN 7
CN 6
CN 3
PB : OFF
R25
E.F. Q5
R14
R26
Q6 PB:OFF
Q4 PB:OFF
VIDEO OUT
TP10
AUX VIDEO OUT (to CONN. PANEL)
CN 6
E.F. Q4
CLAMP D2, D4
Q2
E.F. Q1
CN 8
VIDEO OUT (to RF CONV.)
E.F. Q7
EQ1
D1
IC 1
Vcc
E.F.
OSC
GND
CF1
CN 1
CH SET (from COLOR PWB)
09 COLOR
REC VIDEO OUT (to REC COLOR CC'T)
CN 1
CN 32
CN 34
0.5H JUMP PULSE (See color section)
D331
SP or NOR : High
D332
H
L
IC 309
TP 327
R449
AMP Q325,Q326
BALANCED MOD
AMP Q329,Q328
0.5H DELAY
E.F. Q327
BALANCED MOD
BIAS CIRCUIT
IC 301
9V
Q331, Q332
SHIFTER
R474
14.3 MHz OSC
Q330
CN 32
CN 37
Y Signal
Fs 4.433619 MHz
Color signal
Frequency (MHz)
15
15 Y
IC 2
SYNC SEP.
CLAMP
AGC DET.
AGC
E-E AMP
SYNC OUT (to Conv. 11, 41)
TP22
R87
R85
R84
C69
R82
C68
C67
E-E OUT (to Q35-B)
R71
E-E VIDEO
E.F. Q18
VIDEO OUT (to COLOR PWB) (for SYNC SEP.)
CN 3
CN 2
E.F. Q11
L11
E.F. Q10
C35
LPF
L10
C33
Subcarrier trap
LPF 2
EQ 2
E.F. Q9
IC 2
AMP
D7
D8
C75
Q20 LP:ON
E.F. Q22
Y SIGNAL FILTER
CLAMP
NON PRE
C77
Q21
E-E & INSERT:ON
Constant Level
Added Reference Pulse
Constant level
SYNC
Attenuation (dB)
Delay Time
Frequency (MHz)
Response (dB)
Frequency
TP 21
CLIP & H.P AMP
MIXER
PB 9V
E.F.
DIFFER AMP
E.F.
IC 4
C126
L34
EQ
E.F. Q35
C124
C125
R169
Q34 PB:ON
IC 2
E.F.
Y/C MIX
SQUELCH
CLAMP
NOISE LIMITER
NON-LIN DEEMPH
C72
C54
C51
Q17 LP:ON
PB Y
R27
E.F. Q5
R12~25, C14~21, L3~5, Q2, Q4
PB EQ AMP M.DEEMPHASIS
Q3 SP:ON
50Hz
CN 3
CN 1
PRO. COLOR IN (from COLOR PWB)
V. PULSE IN (from SERVO PWB)
a :
b :
-b :
c :
d :
e :
Delay time
1 pin input
5 pin input
a - b
High frequency component
10 pin output
c+d (a-c-d) 8 pin output
Preshoot
Principle
Delay Time (nsec)
Frequency (MHz)
Response (dB)
-4dB
0dB
+6dB
Frequency (MHz)
FM EQ AMP
Frequency (MHz)
a :
b :
c1 :
d1 :
c2 :
d2 :
c :
Output sign
Noise canceller

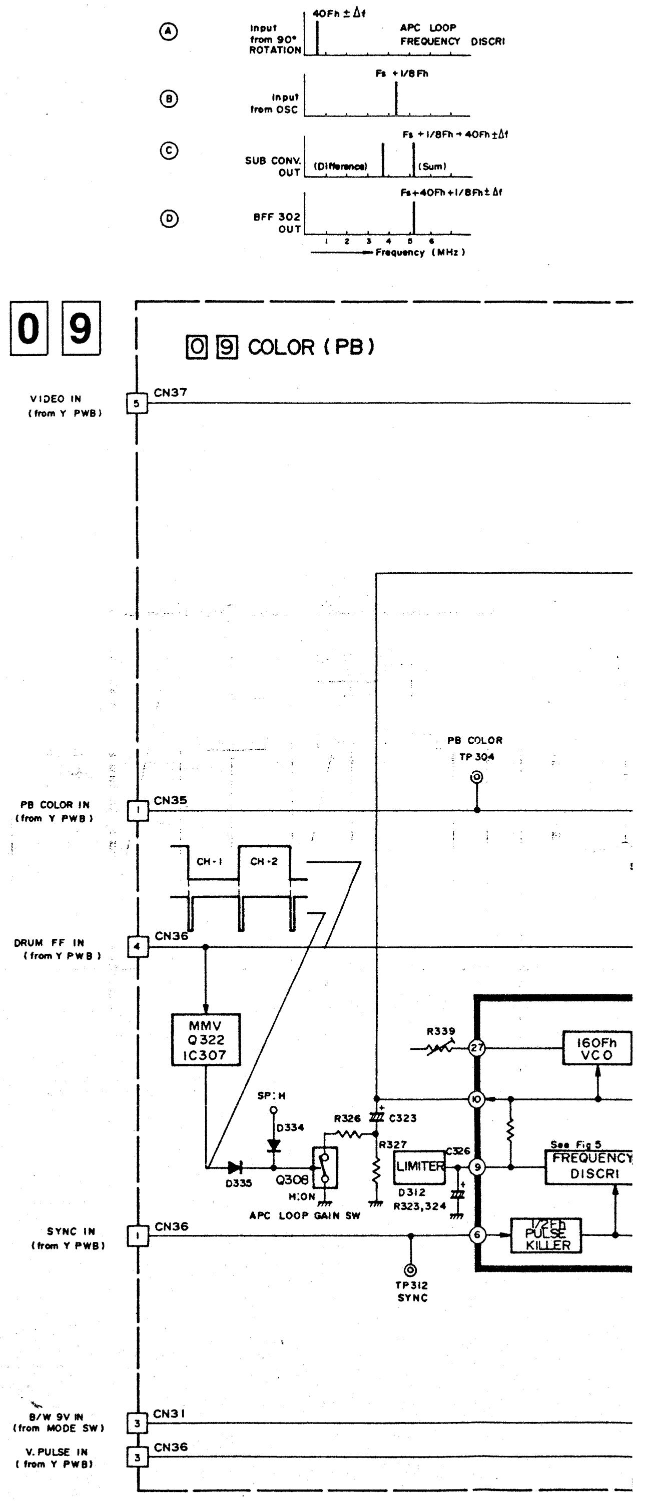

3 5
3 5 PRE AMP
IC 3
IC 1
IC 2
IC 3
IC 1
CL AMP
NON-LIN PRE-EMPH
MAIN PRE-EMPH
WHITE/DARK CLIP
FM
HPF
C96,C47 L26,L27
DE-EMPH C127,C130
E.F Q36
E.F Q16
E.F Q26
E.F Q39
REC AMP-1
REC AMP-2 Q37,Q38
DRUM FLIP FLOP IN (from SERVO PWB)
DRUM FLIP FLOP TP11
REC COLOR IN (from COLOR PWB)
CARRIER
WHITE CLIP
SP REC FM
SP REC COLOR
LP REC COLOR
CH-1 CH-2 (for FM carrier interleaving)
E-E 9V
Q23 REC: OFF
Q24 E-E & INSERT: ON
E-E & INSERT: ON
Q19 LP: ON
TP 3
TP 21
TP 23
TP 22
TP 6
CN 1
CN 2
CN 3
CN 6
CN 7
CLIP & H.P AMP
DIFFERENTIAL AMP
MIXER
NOISE BAL.
E.F Q1
LPF 1 E 1
E.F
DEMOD
LIMITER
1H DELAY
AMP Q6,Q8
E.F Q9
LPF 2 E 2
E.F Q10
E.F Q11
Supcarrier trap
DEMOD
DOUBLE LIMITER
E.F Q12
EQ 3
E.F Q13
FM EQ AMP Q14
HPF
SP PB EQ
Q15 SP: OFF
Q7 LP: ON
AMP
DOC SW
DOC DET
FM AGC
AGC DET
PB FM ENVELOPE OUT (to CONN. 16)
AMP Q28,29,27
EQ 4
LPF3
Q30 S-DET: ON
Q31 LP: ON
PB COLOR OUT (to COLOR PWB)
PB FM
E.F Q11
SWITCH
2nd AMP
CH-2 PRE AMP
CH-1 PRE AMP
LPF
RY1
SP CH-2 F0
LP CH-2 F0
SP CH-2 Q
LP CH-2 Q
SP CH-1 F0
LP CH-1 F0
SP CH-1 Q
LP CH-1 Q
Q1 PB: ON
Q2 PB: ON
Q3 PB: ON
Q8 SP: ON
Q6 LP: ON
Q4 E-E: ON
Q9 SP: ON
Q7 LP: ON
Q5 E-E: ON
CH-2 VIDEO HEAD
CH-1 VIDEO HEAD
LP
SP
Response (dB)
-6dB
0dB
+4dB
(Input Level)
Frequency (MHz)
FM Signal Band (Carrier)
FM Low Side Band
FM High Side Band
Sync Tip
White Peak
Attenuation (dB)
Fs; 626.953 MHz
Fs ≒ 500KHz
Recording Current (dB)
Down Converted Color Signal
Fs; 626.953KHz
Y.FM Signal
Video head resonance and Q
a/b = 2
1.0MHz
5.0 MHz
Random noise
line n
line (n-1)
b - c1
a + d1
b - c2
c + d2
Output signal without noise
Noise canceller principle
FM demodulation noise
Delay Time (n sec)
Delay time (n sec)
F (MHz)
Output Level
Overall
FM AMP Frequency Characteristics
Head Output
Y Signal
Noise
Overlap
CH-1
CH-2
SW amp out

Farbsignal Blockschaltbild · Color signal block diagram

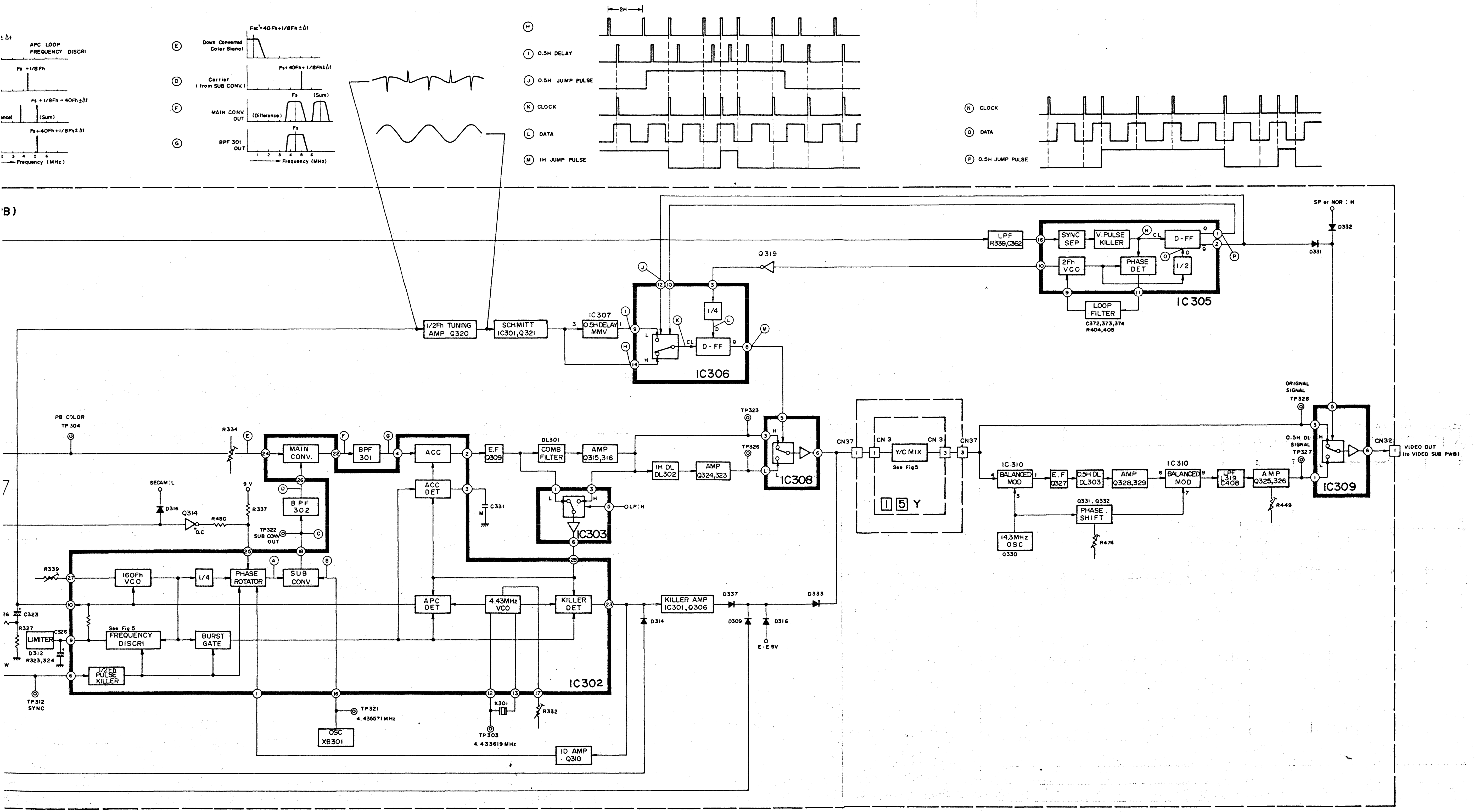
Aufnahme · Record


Y Signal
Fs ; 4.433619 MHz
Color Signal
1 2 3 4 5 6
Frequency (MHz)
Attenuation (dB)
Fs
4.433619 MHz
0
3
3.58
5.05
Frequency (MHz)
Burst
Constant Level
Input from 90° ROTATION (AFC Loop)
40Fh ; 625 KHz
Input from VXO (APC Loop)
Fs + 1/8 Fh ; 4.435571 MHz
SUB CONV OUT
3.808619
5.060572 MHz
(Difference)
(Sum)
BPF 403 OUT
Fs + 40Fn + 1/8Fh ; 5.060572 MHz
1 2 3 4 5 6
Frequency (MHz)
Color Signal (from ACC)
Fs ; 4.433619MHz
Carrier (from SUB CONV.)
Fs + 40Fh + 1/8 Fh
MAIN CONV. OUT
Fc ; 40Fh + 1/8Fh
(Difference)
2Fs + 40Fh + 1/8Fh
(Sum)
9.5 MHz
LPF 401 OUT
Fc ; 40Fh + 1/8Fh = 626.953 KHz
1 2 3 4 5 6
Frequency (MHz)
Attenuation (dB)
0
3
1.56
Frequency (MHz)
0 9
0 9 COLOR (REC)
VIDEO OUT (to Y PWB)
CN 34
5
VIDEO IN (from VIDEO SUB PWB)
CN 32
10
E-E 9V
E.F Q307
BPF 301
22 REC/PB CONTROL
C331
3
4
ACC
ACC DET
APC DET
KILLER DET
4.43MHz VCO
VCO R332
17
12
13
X 301
4.433619MHz TP303
OSC XB301
TP321 4.435571MHz
16
SUB CONV
18
TP322 SUB CONV. OUT
BPF 302
26
MAIN CONV
9V
R337
R480
Q314
*O.C.
D316
SECAM: LOW
25
PHASE ROTATOR
1/4
160Fh VCO
27
AFC R339
1/160
AFC DET
1/2Fh PULSE KILLER
BURST GATE
KILLER
6
11
1
LPF
LPF 301
E.F Q312
CN36
4
DRUM FF IN (from Y PWB)
CN36
1
SYNC IN (from Y PWB)
CN35
8
REC COLOR OUT (to Y PWB)
D338
23
CN 31
3
B/W 9V IN (from MODE SW)
D314
KILLER AMP IC301, Q306

Wiedergabe · Playback


Ⓐ
Input from 90° ROTATION
40Fh ± Δf
APC LOOP FREQUENCY DISCRI
Ⓑ
Input from OSC
Fs + 1/8Fh
Ⓒ
SUB CONV. OUT
(Difference)
(Sum)
Fs + 1/8Fh + 40Fh ± Δf
Ⓓ
BFF 302 OUT
Fs+40Fh+1/8Fh ± Δf
1 2 3 4 5 6
Frequency (MHz)
0 9
0 9 COLOR (PB)
VIDEO IN (from Y PWB)
CN37
5
PB COLOR TP 304
PB COLOR IN (from Y PWB)
CN35
1
CH-1
CH-2
DRUM FF IN (from Y PWB)
CN36
4
MMV Q322 IC307
SP: H
D334
D335
Q308
H: ON
APC LOOP GAIN SW
R326
C323
R327
LIMITER
C326
D312
R323,324
R339
27
160Fh VCO
10
9
See Fig 5
FREQUENCY DISCRI
6
1/2Fh PULSE KILLER
SYNC IN (from Y PWB)
CN36
1
TP312 SYNC
B/W 9V IN (from MODE SW)
CN31
3
V. PULSE IN (from Y PWB)
CN36
3

· Playback


'B)
± Δf
APC LOOP
FREQUENCY DISCRI
Fs + 1/8 Fh
Fs + 1/8Fh + 40Fh ± Δf
nce)
(Sum)
Fs+40Fh+1/8Fh ± Δf
2 3 4 5 6
Frequency (MHz)
Fsc' = 40 Fh + 1/8 Fh ± Δf
E
Down Converted Color Signal
D
Carrier (from SUB CONV.)
Fs+40Fh+1/8Fh ± Δf
F
MAIN CONV. OUT
(Difference)
Fs
(Sum)
G
BPF 301 OUT
Fs
1 2 3 4 5 6
Frequency (MHz)
2H
H
I 0.5H DELAY
J 0.5H JUMP PULSE
K CLOCK
L DATA
M 1H JUMP PULSE
N CLOCK
O DATA
P 0.5H JUMP PULSE
PB COLOR
TP 304
R334
MAIN CONV.
BPF 301
ACC
ACC DET
E.F Q309
DL301
COMB FILTER
AMP Q315,316
1H DL DL302
AMP Q324,323
TP323
TP326
IC308
CN37
CN 3
Y/C MIX
See Fig5
1 5 Y
IC 310
BALANCED MOD
E.F Q327
0.5H DL DL303
AMP Q328,329
LPF L319 C408
AMP Q325,326
R449
Q331, Q332
PHASE SHIFT
R474
14.3MHz OSC
Q330
ORIGNAL SIGNAL
TP328
0.5H DL SIGNAL
TP327
IC309
CN32
VIDEO OUT (to VIDEO SUB PWB)
SP or NOR : H
D332
D331
LPF R339,C362
SYNC SEP
V.PULSE KILLER
D-FF
2Fh VCO
PHASE DET
1/2
LOOP FILTER
C372,373,374
R404,405
IC305
Q319
1/2Fh TUNING AMP Q320
SCHMITT IC301,Q321
IC307
0.5H DELAY MMV
1/4
D-FF
IC306
CL
LP : H
C331
IC303
SECAM : L
D316
Q314
O.C
R480
9 V
R337
BPF 302
TP322
SUB CONV. OUT
R339
160Fh VCO
1/4
PHASE ROTATOR
SUB CONV.
C323
R327
LIMITER
C326
D312
R323,324
See Fig 5
FREQUENCY DISCRI
BURST GATE
1/2Fh PULSE KILLER
TP312
SYNC
APC DET
4.43MHz VCO
KILLER DET
IC302
TP321
4.435571 MHz
OSC XB301
X301
TP303
4.433619 MHz
R332
KILLER AMP IC301,Q306
D337
D333
D314
D309
D316
E-E 9V
ID AMP Q310

Servo Blockschaltbild · Servo block diagram

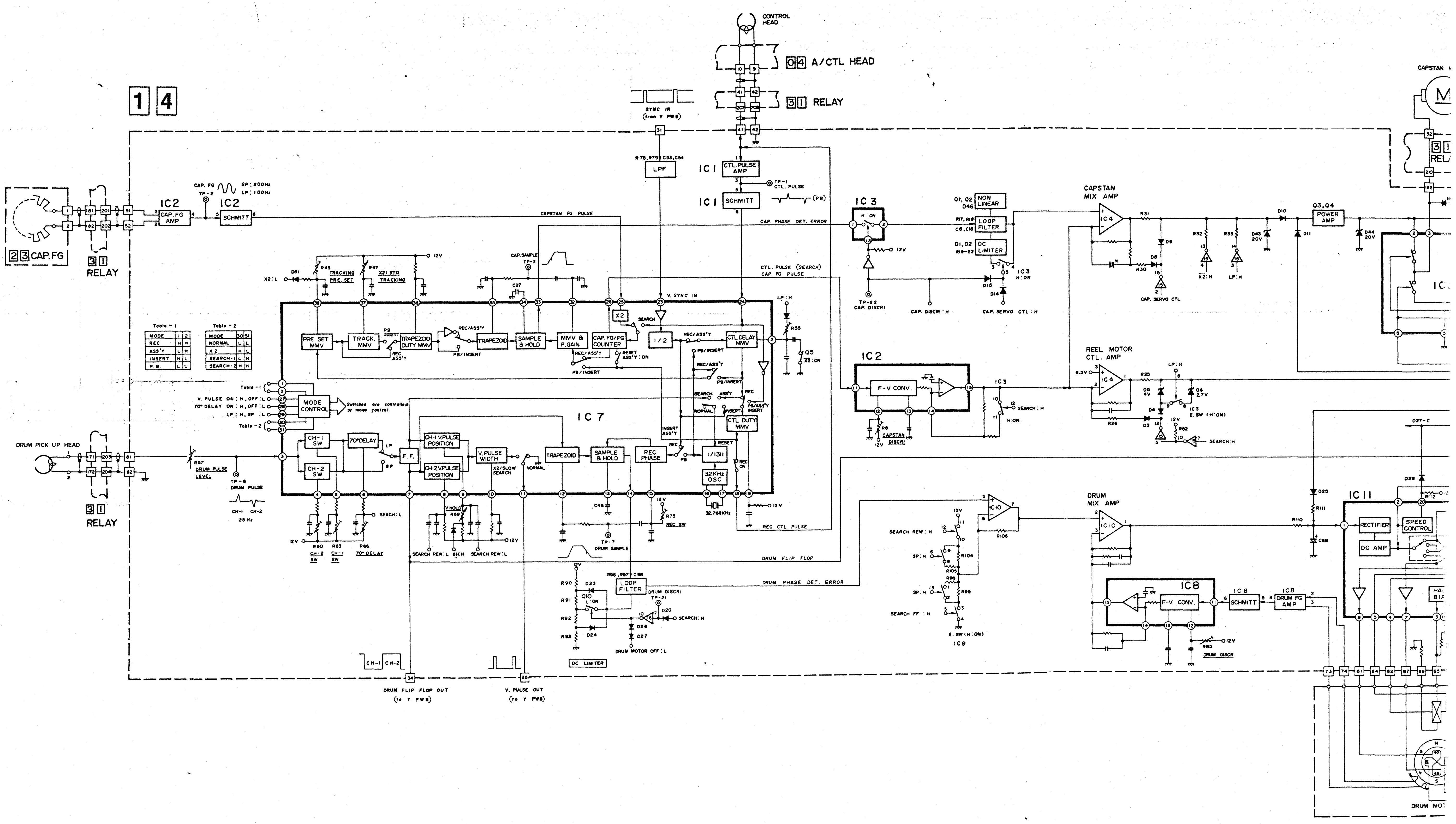
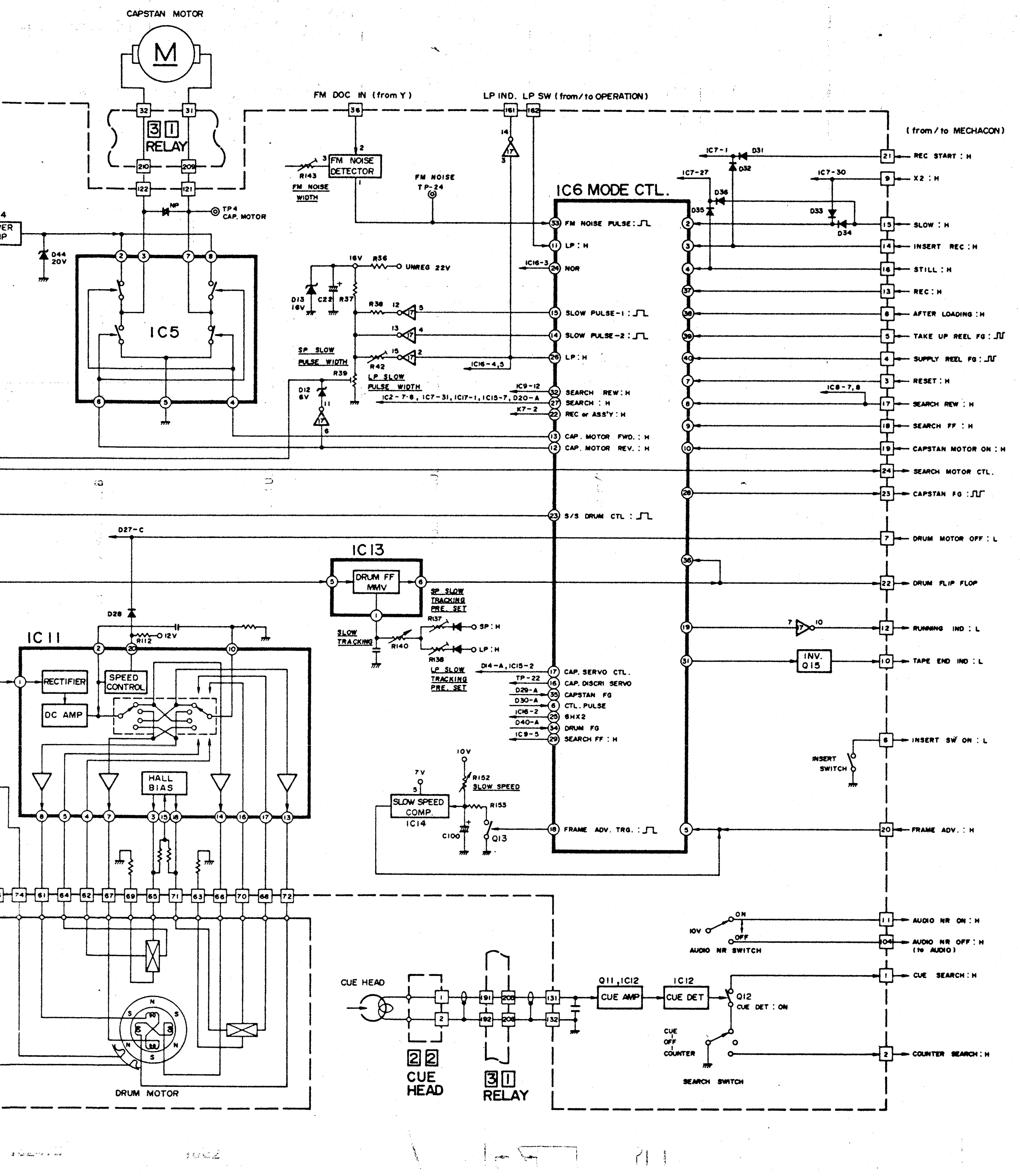

1 4
CONTROL HEAD
04 A/CTL HEAD
31 RELAY
SYNC IN (from Y PWB)
LPF
R78, R79, C53, C54
IC1
CTL. PULSE AMP
TP-1 CTL. PULSE
SCHMITT
(PB)
23 CAP.FG
31 RELAY
IC2
CAP. FG AMP
CAP. FG TP-2
SP: 200Hz
LP: 100Hz
SCHMITT
CAPSTAN FG PULSE
CAP. PHASE DET. ERROR
CTL. PULSE (SEARCH)
CAP. FG PULSE
12V
X2:L
D51
R45 TRACKING PRE. SET
R47 X2 STD TRACKING
CAP. SAMPLE TP-3
C27
V. SYNC IN
LP:H
R55
Q5
X2:ON
PRE SET MMV
TRACK. MMV
PB INSERT
REC ASS'Y
TRAPEZOID DUTY MMV
REC/ASS'Y
PB/INSERT
TRAPEZOID
SAMPLE & HOLD
MMV & P.GAIN
CAP. FG/PG COUNTER
RESET ASS'Y: ON
X2
SEARCH
1/2
CTL. DELAY MMV
PB/INSERT
REC/ASS'Y
SEARCH
ASS'Y
REC
NORMAL
INSERT
PB/ASS'Y INSERT
CTL. DUTY MMV
INSERT ASS'Y
RESET
1/1311
32KHz OSC
32.768KHz
REC ON
REC
PB
IC7
Table-1
V. PULSE ON: H, OFF: L
70° DELAY ON: H, OFF: L
LP: H, SP: L
Table-2
MODE CONTROL
Switches are controlled by mode control.
DRUM PICK UP HEAD
31 RELAY
R57 DRUM PULSE LEVEL
TP-6 DRUM PULSE
CH-1 CH-2
25 Hz
CH-1 SW
CH-2 SW
70° DELAY
LP
SP
F.F.
CH-1 V.PULSE POSITION
CH-2 V.PULSE POSITION
V. PULSE WIDTH
X2/SLOW SEARCH
NORMAL
TRAPEZOID
SAMPLE & HOLD
REC PHASE
SEACH: L
R60 CH-2 SW
R63 CH-1 SW
R66 70° DELAY
V.HOLD R69
SEARCH REW: L
8H: H
SEARCH REW: L
C46
TP-7 DRUM SAMPLE
R75 REC SW
REC CTL PULSE
DRUM FLIP FLOP
DRUM PHASE DET. ERROR
R96, R97, C66
LOOP FILTER
DRUM DISCRI TP-21
R90
R91
R92
R93
D23
D24
Q10 L: ON
D20
SEARCH: H
D26
D27
DRUM MOTOR OFF: L
DC LIMITER
CH-1 CH-2
DRUM FLIP FLOP OUT (to Y PWB)
V. PULSE OUT (to Y PWB)
IC3
H: ON
TP-22 CAP. DISCRI
CAP. DISCRI: H
Q1, Q2 D46 NON LINEAR
R17, R18 C15, C16 LOOP FILTER
D1, D2 R19~22 DC LIMITER
D15
D14
IC3 H: ON
CAP. SERVO CTL: H
CAPSTAN MIX AMP
IC4
R31
R30
D8
D9
CAP. SERVO CTL
R32
R33
X2: H
LP: H
D43 20V
D10
D11
Q3, Q4 POWER AMP
D44 20V
CAPSTAN M
31 RELAY
IC2
F-V CONV.
R8 CAPSTAN DISCRI
IC3
SEARCH: H
H: ON
REEL MOTOR CTL. AMP
6.5V
IC4
R25
R26
D3
D4
D5 4V
D6 2.7V
LP: H
IC3 E. SW (H: ON)
R82
SEARCH: H
D27-C
D28
D25
R111
R110
C69
R112
IC10
R106
SEARCH REW: H
SP: H
R104
R105
R98
R99
SEARCH FF: H
E. SW (H: ON)
IC9
DRUM MIX AMP
IC10
IC8
F-V CONV.
R85 DRUM DISCR
IC8 SCHMITT
IC8 DRUM FG AMP
IC11
RECTIFIER
SPEED CONTROL
DC AMP
DRUM MOT

Table - 1

MODE	1	2
REC	H	H
ASS'Y	L	H
INSERT	H	L
P. B.	L	L

Table - 2

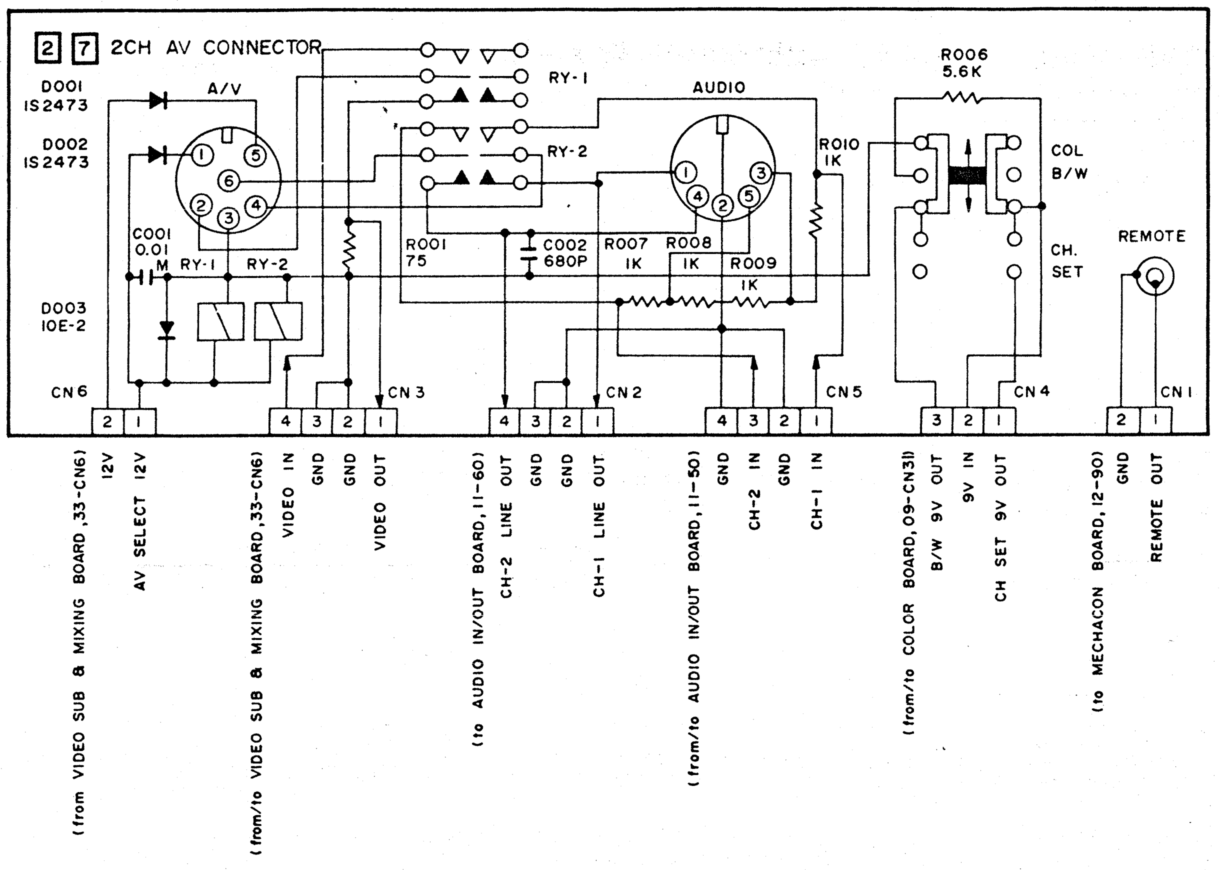
MODE	30	31
NORMAL	L	L
X 2	H	L
SEARCH-1	L	H
SEARCH-2	H	H



CAPSTAN MOTOR
M
31 RELAY
IC5
FM DOC IN (from Y)
LP IND. LP SW (from/to OPERATION)
(from/to MECHACON)
FM NOISE DETECTOR
FM NOISE TP-24
IC6 MODE CTL.
FM NOISE PULSE
LP : H
NOR
SLOW PULSE-1
SLOW PULSE-2
LP : H
SEARCH REW : H
SEARCH : H
REC or ASS'Y : H
CAP. MOTOR FWD. : H
CAP. MOTOR REV. : H
S/S DRUM CTL
CAP. SERVO CTL.
CAP. DISCRI SERVO
CAPSTAN FG
CTL. PULSE
6HX2
DRUM FG
SEARCH FF : H
FRAME ADV. TRG.
REC START : H
X2 : H
SLOW : H
INSERT REC : H
STILL : H
REC : H
AFTER LOADING : H
TAKE UP REEL FG
SUPPLY REEL FG
RESET : H
SEARCH REW : H
SEARCH FF : H
CAPSTAN MOTOR ON : H
SEARCH MOTOR CTL.
CAPSTAN FG
DRUM MOTOR OFF : L
DRUM FLIP FLOP
RUNNING IND : L
TAPE END IND : L
INSERT SW ON : L
FRAME ADV. : H
AUDIO NR ON : H
AUDIO NR OFF : H (to AUDIO)
CUE SEARCH : H
COUNTER SEARCH : H
IC13
DRUM FF MMV
SP SLOW TRACKING PRE. SET
LP SLOW TRACKING PRE. SET
IC11
RECTIFIER
SPEED CONTROL
DC AMP
HALL BIAS
INV. Q15
SLOW SPEED COMP. IC14
INSERT SWITCH
AUDIO NR SWITCH
CUE HEAD
22 CUE HEAD
31 RELAY
Q11, IC12 CUE AMP
IC12 CUE DET
Q12 CUE DET : ON
SEARCH SWITCH
DRUM MOTOR

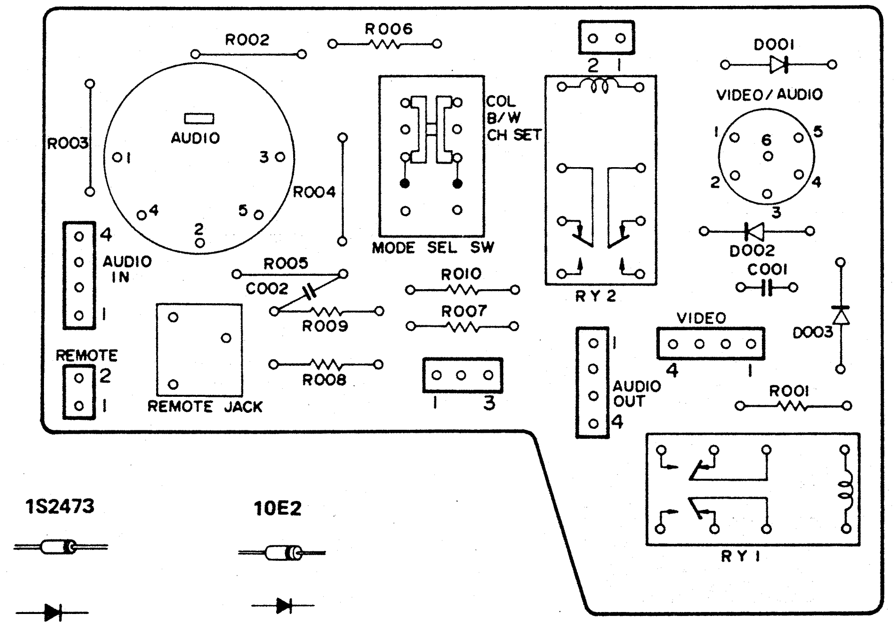
Video- und Audio-Eingang/Ausgang-Platte · Video and Audio In/out Terminal

27



27 2CH AV CONNECTOR
D001 1S2473
D002 1S2473
D003 10E-2
A/V
AUDIO
RY-1
RY-2
C001 0.01 M
R001 75
C002 680P
R007 1K
R008 1K
R009 1K
R006 5.6K
R010 1K
COL B/W
CH. SET
REMOTE
CN6
CN3
CN2
CN5
CN4
CN1
12V
AV SELECT 12V
(from VIDEO SUB & MIXING BOARD, 33-CN6)
VIDEO IN
GND
GND
VIDEO OUT
(from/to VIDEO SUB & MIXING BOARD, 33-CN6)
CH-2 LINE OUT
GND
GND
CH-1 LINE OUT
(to AUDIO IN/OUT BOARD, 11-60)
GND
CH-2 IN
GND
CH-1 IN
(from/to AUDIO IN/OUT BOARD, 11-50)
B/W 9V OUT
9V IN
CH SET 9V OUT
(from/to COLOR BOARD, 09-CN31)
GND
REMOTE OUT
(to MECHACON BOARD, 12-90)

– Circuit board –

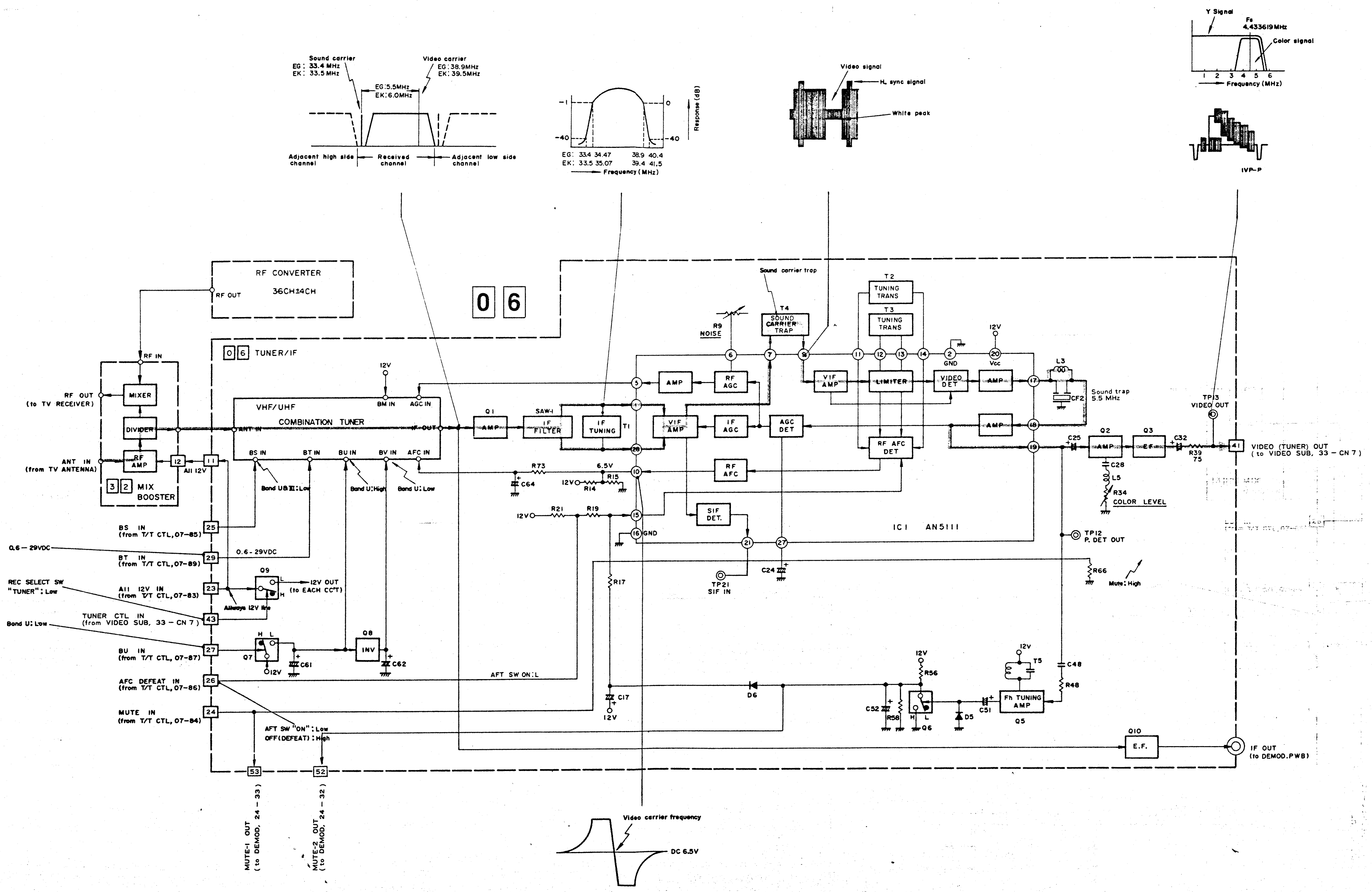


R002
R006
R003
AUDIO
R004
COL B/W CH SET
MODE SEL SW
D001
VIDEO/AUDIO
D002
C001
AUDIO IN
REMOTE
R005
C002
R009
R010
R007
R008
REMOTE JACK
RY 2
VIDEO
D003
AUDIO OUT
R001
RY 1

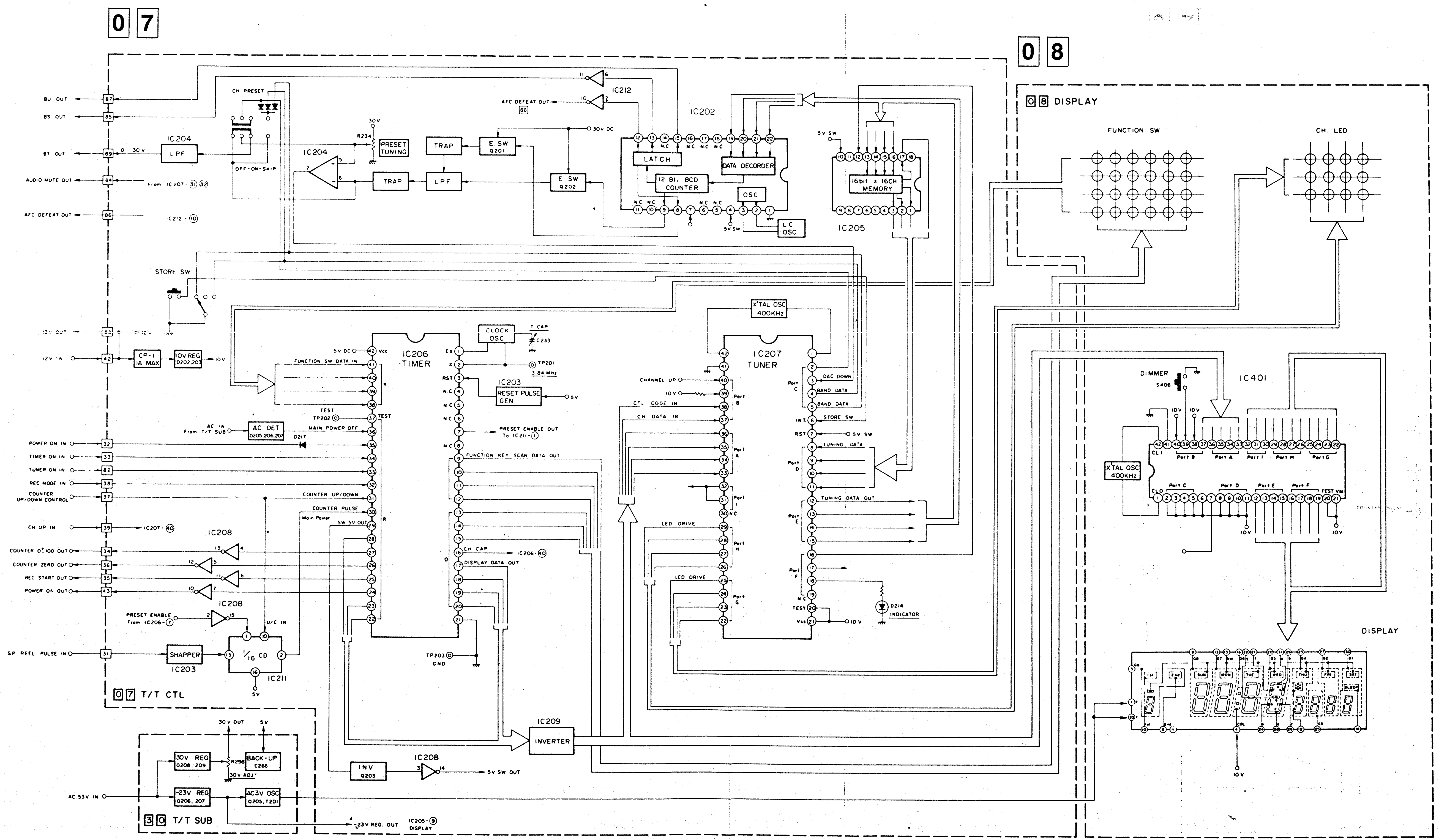
1S2473

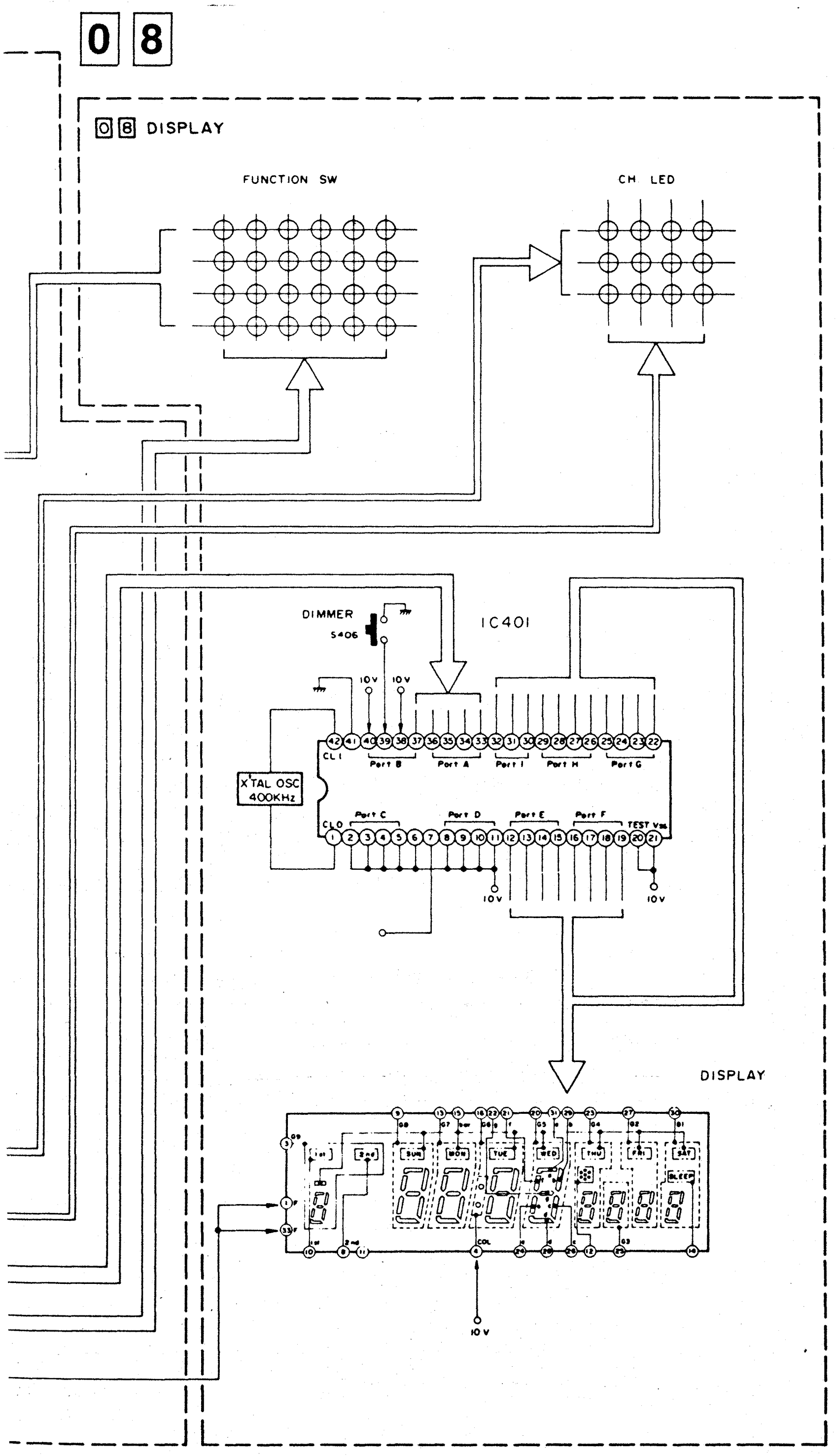
10E2

Tuner/ZF Blockschaltbild · Tuner/IF block diagram

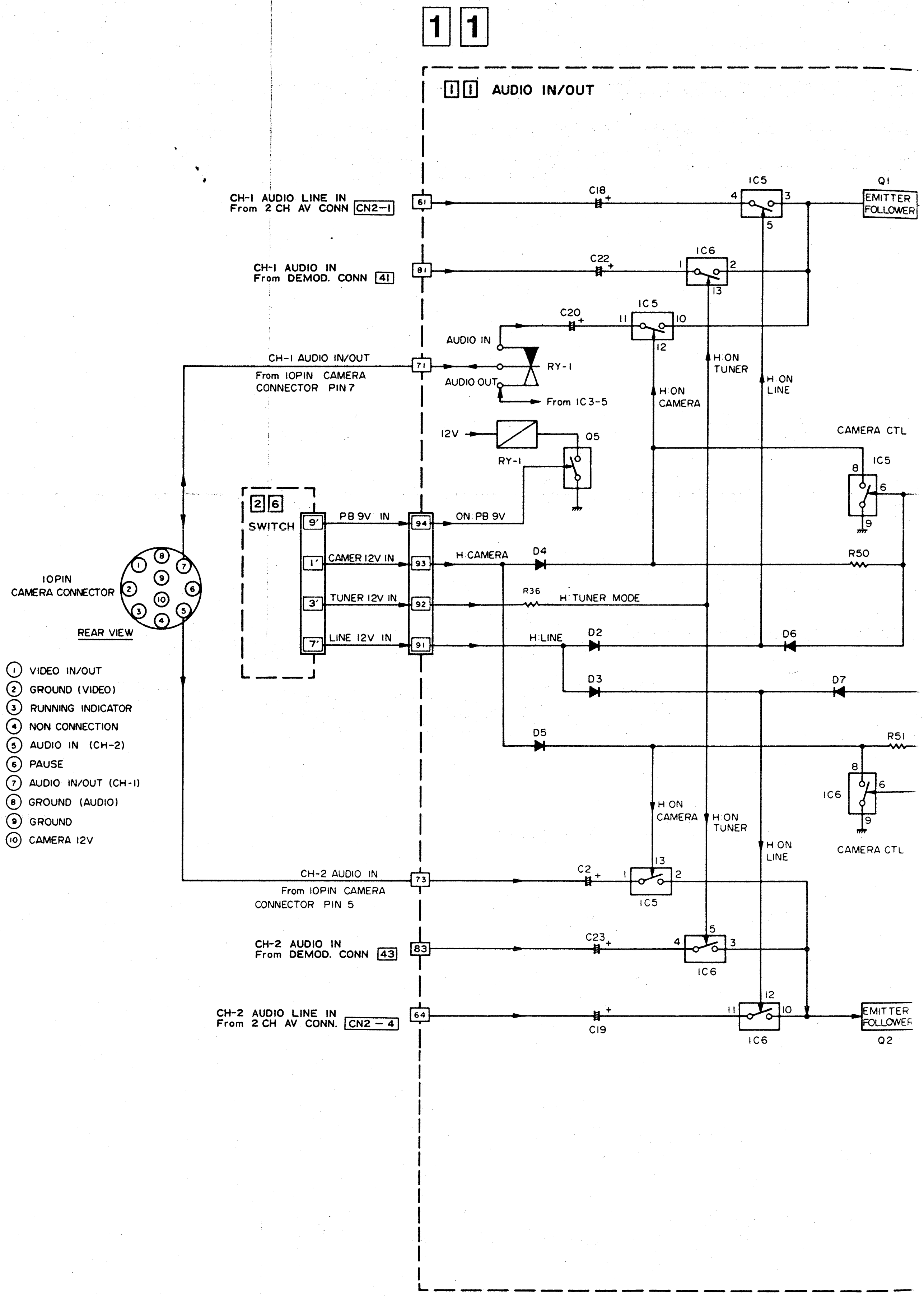

Sound carrier
EG: 33.4 MHz
EK: 33.5 MHz
Video carrier
EG: 38.9MHz
EK: 39.5MHz
EG: 5.5MHz
EK: 6.0MHz
Adjacent high side channel
Received channel
Adjacent low side channel
-1
0
-40
-40
Response (dB)
EG: 33.4 34.47 38.9 40.4
EK: 33.5 35.07 39.4 41.5
Frequency (MHz)
Video signal
H. sync signal
White peak
Y Signal
Fs
4.433619 MHz
Color signal
1 2 3 4 5 6
Frequency (MHz)
1VP-P
RF CONVERTER
36CH±4CH
RF OUT
0 6
RF IN
0 6 TUNER/IF
RF OUT
(to TV RECEIVER)
MIXER
DIVIDER
ANT IN
(from TV ANTENNA)
RF AMP
12
11
All 12V
3 2 MIX BOOSTER
12V
VHF/UHF
COMBINATION TUNER
BM IN
AGC IN
ANT IN
IF OUT
BS IN
BT IN
BU IN
BV IN
AFC IN
Band U&III: Low
Band U: High
Band U: Low
Q1
AMP
SAW-1
IF FILTER
IF TUNING
T1
R73
6.5V
C64
12V
R14
R15
R21
R19
BS IN
(from T/T CTL, 07-85)
25
0.6 — 29VDC
BT IN
(from T/T CTL, 07-89)
29
0.6 - 29VDC
REC SELECT SW
"TUNER": Low
All 12V IN
(from T/T CTL, 07-83)
23
Q9
L
H
12V OUT
(to EACH CC'T)
Allways 12V line
TUNER CTL IN
(from VIDEO SUB, 33 — CN 7)
43
Band U: Low
BU IN
(from T/T CTL, 07-87)
27
H L
Q7
12V
C61
Q8
INV
C62
AFC DEFEAT IN
(from T/T CTL, 07-86)
26
AFT SW ON: L
MUTE IN
(from T/T CTL, 07-84)
24
AFT SW "ON": Low
OFF(DEFEAT): High
53
52
MUTE-1 OUT
(to DEMOD, 24 — 33)
MUTE-2 OUT
(to DEMOD, 24 — 32)
Video carrier frequency
DC 6.5V
Sound carrier trap
R9
NOISE
T4
SOUND CARRIER TRAP
T2
TUNING TRANS
T3
TUNING TRANS
12V
6
7
9
11
12
13
14
2
GND
20
Vcc
5
AMP
RF AGC
VIF AMP
LIMITER
VIDEO DET
AMP
17
L3
CF2
Sound trap
5.5 MHz
4
VIF AMP
IF AGC
AGC DET
AMP
18
28
RF AFC DET
19
10
RF AFC
15
SIF DET.
16 GND
IC1 AN5111
21
27
C24
TP21
SIF IN
R17
C17
12V
C25
Q2
AMP
Q3
E.F.
C32
R39
75
TP13
VIDEO OUT
41
VIDEO (TUNER) OUT
(to VIDEO SUB, 33 — CN 7)
C28
L5
R34
COLOR LEVEL
TP12
P. DET OUT
R66
Mute: High
12V
R56
D6
C52
R58
H L
Q6
D5
C51
12V
T5
Fh TUNING AMP
Q5
C48
R48
Q10
E.F.
IF OUT
(to DEMOD.PWB)

Tuner/Timer Steuer- und Anzeige-Schaltungen · Tuner/Timer control and Display circuit

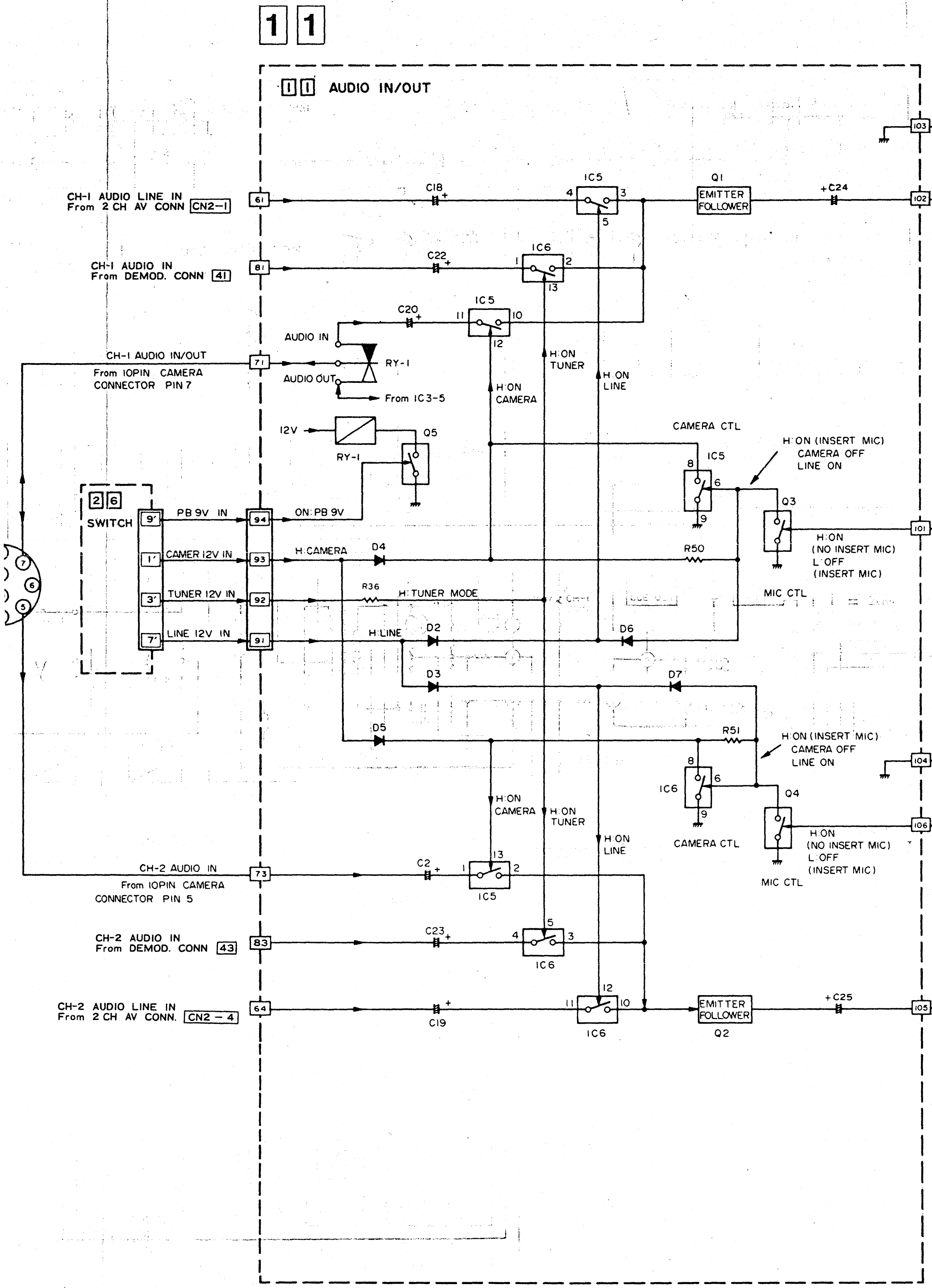

07
08
08 DISPLAY
FUNCTION SW
CH LED
BU OUT
BS OUT
BT OUT
AUDIO MUTE OUT
AFC DEFEAT OUT
CH PRESET
IC204
LPF
0 – 30V
OFF-ON-SKIP
From IC207-31 32
IC212-10
30V
R234
PRESET TUNING
TRAP
E SW Q201
E SW Q202
30V DC
AFC DEFEAT OUT
IC212
IC202
LATCH
12 Bi. BCD COUNTER
DATA DECORDER
OSC
L.C OSC
5V SW
16bit x 16CH MEMORY
IC205
STORE SW
12V OUT
12V IN
CP-1 1A MAX
10V REG Q202,203
POWER ON IN
TIMER ON IN
TUNER ON IN
REC MODE IN
COUNTER UP/DOWN CONTROL
CH UP IN
IC207-40
COUNTER 0–100 OUT
COUNTER ZERO OUT
REC START OUT
POWER ON OUT
IC208
PRESET ENABLE From IC206-7
U/C IN
SP REEL PULSE IN
SHAPPER
IC203
1/16 CD
IC211
07 T/T CTL
AC IN From T/T SUB
AC DET Q205,206,207
D217
MAIN POWER OFF
TEST TP202
FUNCTION SW DATA IN
COUNTER UP/DOWN
COUNTER PULSE
Main Power
SW 5V OUT
CLOCK OSC
T CAP C233
TP201 3.84 MHz
IC206 TIMER
IC203 RESET PULSE GEN.
PRESET ENABLE OUT To IC211-1
FUNCTION KEY SCAN DATA OUT
CH CAP
IC206-40
DISPLAY DATA OUT
TP203 GND
X'TAL OSC 400KHz
IC207 TUNER
CHANNEL UP
CTL CODE IN
CH DATA IN
DAC DOWN
BAND DATA
STORE SW
INT.
RST
TUNING DATA
TUNING DATA OUT
LED DRIVE
D214 INDICATOR
TEST
Vss
DIMMER S406
IC401
X'TAL OSC 400KHz
Port A
Port B
Port C
Port D
Port E
Port F
Port G
Port H
Port I
DISPLAY
IC209 INVERTER
INV Q203
5V SW OUT
30V OUT
30V REG Q208,209
R298
30V ADJ
BACK-UP C266
-23V REG Q206,207
AC3V OSC Q205,T201
AC 53V IN
30 T/T SUB
-23V REG. OUT
IC205-9 DISPLAY


0 8
0 8 DISPLAY
FUNCTION SW
CH LED
DIMMER
S406
IC401
10 V
10 V
X'TAL OSC
400KHz
CL I
CL O
Port B
Port A
Port I
Port H
Port G
Port C
Port D
Port E
Port F
TEST
VSS
10 V
10 V
DISPLAY
G9
G8
G7
bar
G6
g
f
G5
e
b
G4
G2
G1
1st
2nd
SUN
MON
TUE
WED
THU
FRI
SAT
SLEEP
F
F
1st
2nd
COL
e
d
c
G3
10 V

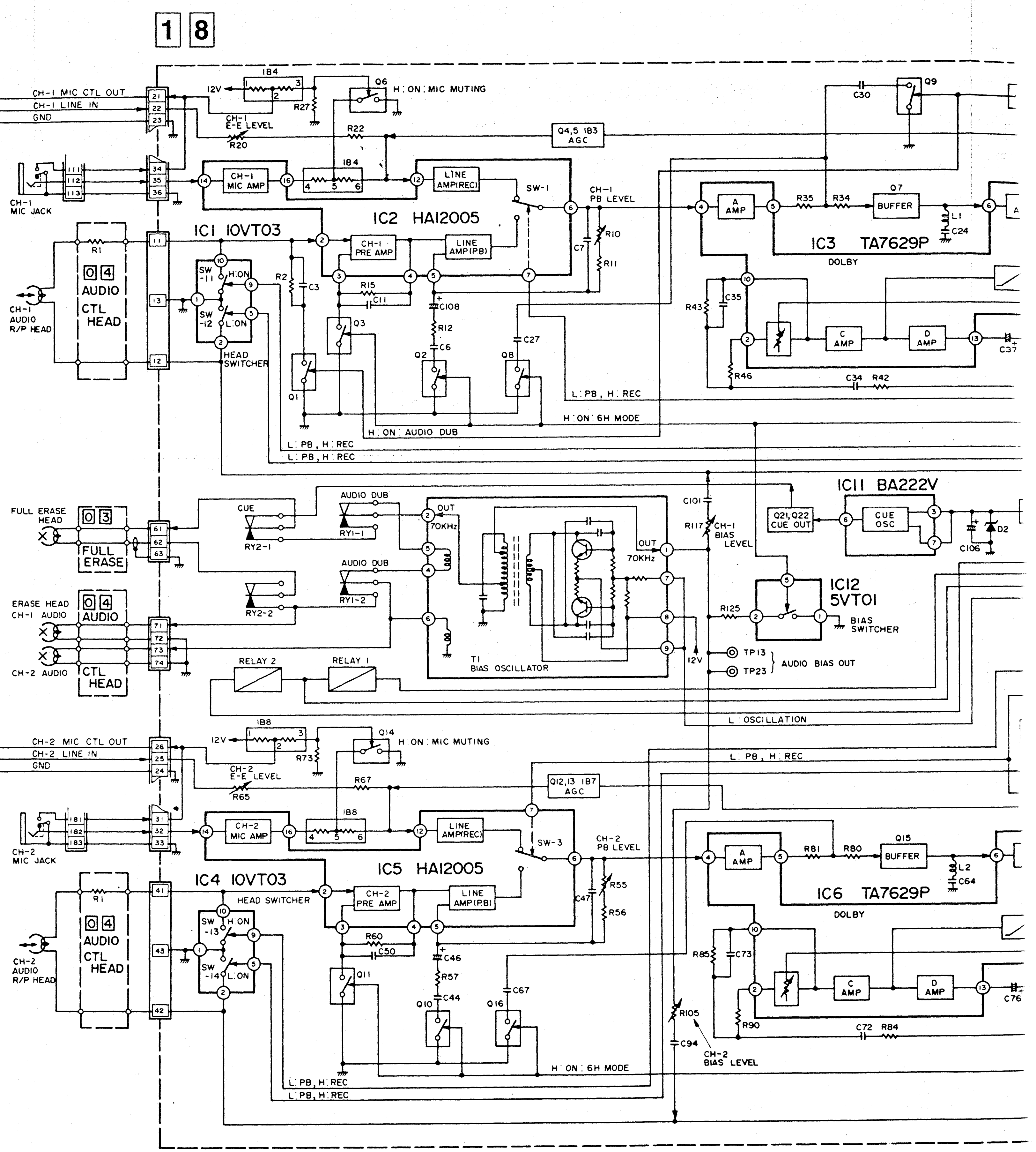
Audio-Eingang/Ausgang – Blockdarstellung
Audio In/Out block diagram


1 1
1 1 AUDIO IN/OUT
CH-1 AUDIO LINE IN
From 2 CH AV CONN CN2–1
61
C18
IC5
Q1
EMITTER FOLLOWER
CH-1 AUDIO IN
From DEMOD. CONN 41
81
C22
IC6
C20
AUDIO IN
AUDIO OUT
RY-1
From IC3-5
CH-1 AUDIO IN/OUT
From 10PIN CAMERA CONNECTOR PIN 7
71
H:ON TUNER
H:ON LINE
H:ON CAMERA
12V
Q5
CAMERA CTL
2 6
SWITCH
PB 9V IN
CAMER 12V IN
TUNER 12V IN
LINE 12V IN
94
93
92
91
ON: PB 9V
H: CAMERA
H: TUNER MODE
H: LINE
D2
D3
D4
D5
D6
D7
R36
R50
R51
10PIN CAMERA CONNECTOR
REAR VIEW
① VIDEO IN/OUT
② GROUND (VIDEO)
③ RUNNING INDICATOR
④ NON CONNECTION
⑤ AUDIO IN (CH-2)
⑥ PAUSE
⑦ AUDIO IN/OUT (CH-1)
⑧ GROUND (AUDIO)
⑨ GROUND
⑩ CAMERA 12V
CH-2 AUDIO IN
From 10PIN CAMERA CONNECTOR PIN 5
73
C2
CH-2 AUDIO IN
From DEMOD. CONN 43
83
C23
CH-2 AUDIO LINE IN
From 2 CH AV CONN. CN2 – 4
64
C19
Q2

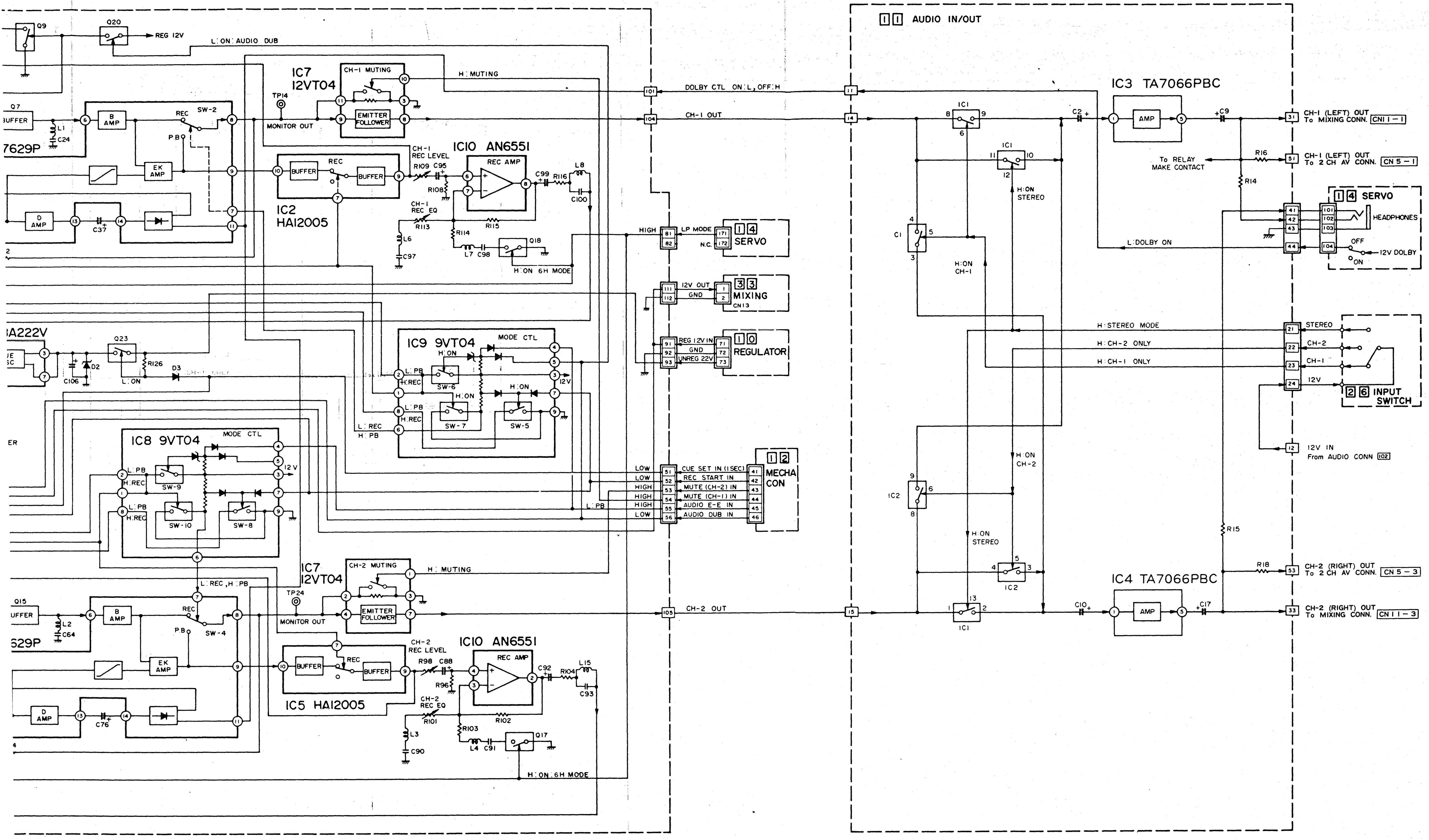
Audio In/Out block diagram


1 1
1 1 AUDIO IN/OUT
CH-1 AUDIO LINE IN From 2 CH AV CONN CN2-1
CH-1 AUDIO IN From DEMOD. CONN 41
CH-1 AUDIO IN/OUT From 10PIN CAMERA CONNECTOR PIN 7
CH-2 AUDIO IN From 10PIN CAMERA CONNECTOR PIN 5
CH-2 AUDIO IN From DEMOD. CONN 43
CH-2 AUDIO LINE IN From 2 CH AV CONN. CN2-4
2 6 SWITCH
PB 9V IN
CAMER 12V IN
TUNER 12V IN
LINE 12V IN
ON: PB 9V
H: CAMERA
H: TUNER MODE
H: LINE
IC5
IC6
Q1 EMITTER FOLLOWER
Q2 EMITTER FOLLOWER
C18
C22
C20
C24
C25
C2
C23
C19
AUDIO IN
AUDIO OUT
RY-1
From IC3-5
12V
Q5
H: ON CAMERA
H: ON TUNER
H: ON LINE
CAMERA CTL
H: ON (INSERT MIC) CAMERA OFF LINE ON
H: ON (NO INSERT MIC) L: OFF (INSERT MIC)
MIC CTL
Q3
Q4
R50
R51
R36
D2
D3
D4
D5
D6
D7
101
102
103
104
105
106
61
81
71
73
83
64
94
93
92
91

Audio-Platte – Blockdarstellung
Audio board block diagram

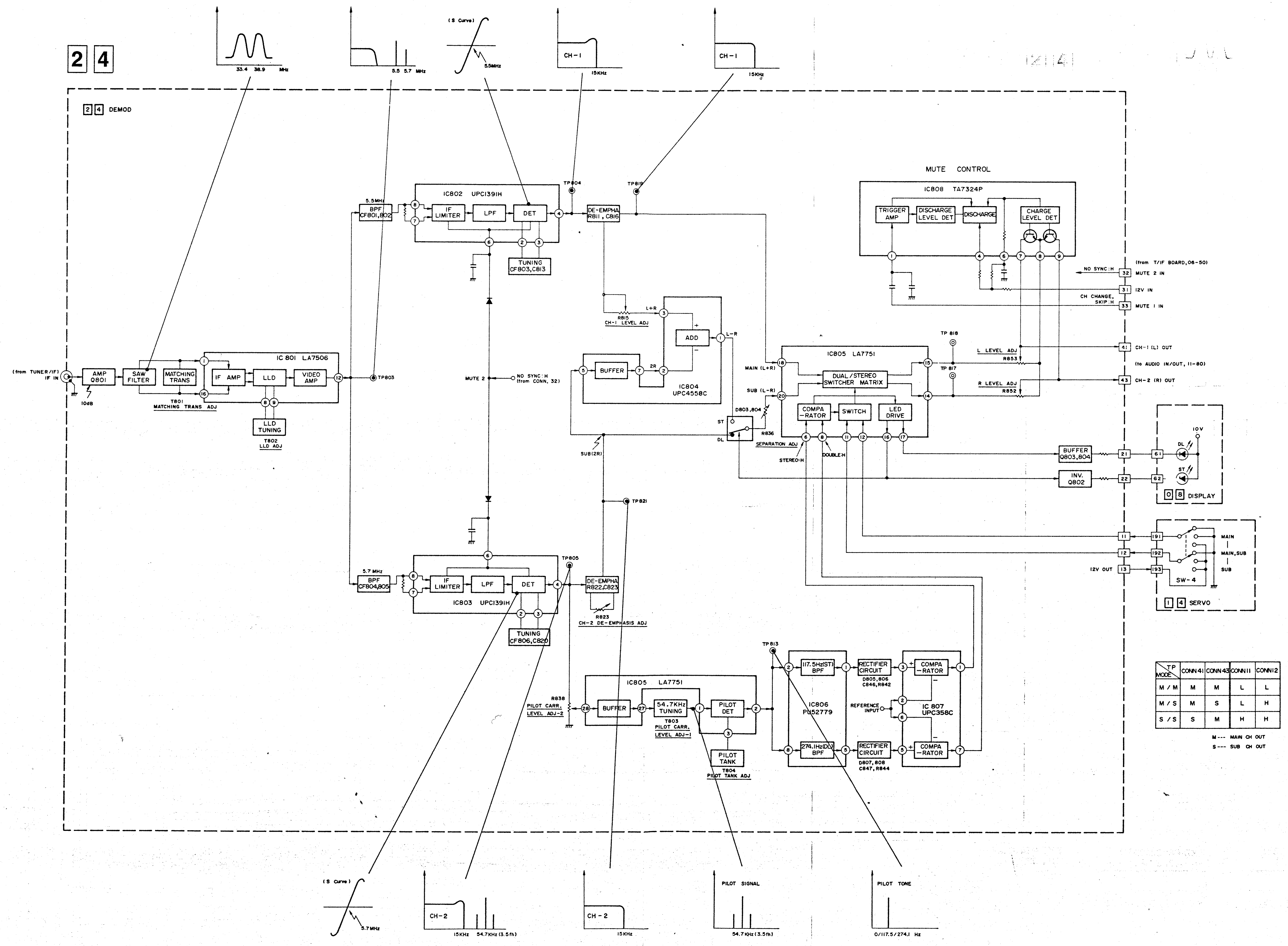

1 8
CH-1 MIC CTL OUT
CH-1 LINE IN
GND
CH-1 MIC JACK
CH-1 E-E LEVEL
R20
R27
R22
Q6 H: ON: MIC MUTING
Q4,5 IB3 AGC
CH-1 MIC AMP
LINE AMP(REC)
SW-1
CH-1 PB LEVEL
IC1 10VT03
IC2 HA12005
CH-1 PRE AMP
LINE AMP(PB)
R10
R11
C7
CH-1 AUDIO R/P HEAD
0 4 AUDIO CTL HEAD
R1
SW-11 H: ON
SW-12 L: ON
HEAD SWITCHER
R2
C3
R15
C11
C108
R12
C6
C27
Q1
Q2
Q3
Q8
L: PB, H: REC
H: ON: 6H MODE
H: ON: AUDIO DUB
IC3 TA7629P
DOLBY
A AMP
C AMP
D AMP
R35
R34
Q7 BUFFER
L1
C24
C30
Q9
R43
C35
R46
C34
R42
C37
FULL ERASE HEAD
0 3 FULL ERASE
ERASE HEAD CH-1 AUDIO
CH-2 AUDIO
CUE
AUDIO DUB
RY2-1
RY2-2
RY1-1
RY1-2
OUT 70KHz
RELAY 2
RELAY 1
T1 BIAS OSCILLATOR
C101
R117 CH-1 BIAS LEVEL
IC11 BA222V
Q21,Q22 CUE OUT
CUE OSC
C106
D2
IC12 5VT01
BIAS SWITCHER
R125
12V
TP13
TP23
AUDIO BIAS OUT
L: OSCILLATION
CH-2 MIC CTL OUT
CH-2 LINE IN
CH-2 E-E LEVEL
R65
R73
R67
Q14 H: ON: MIC MUTING
Q12,13 IB7 AGC
CH-2 MIC JACK
CH-2 MIC AMP
SW-3
CH-2 PB LEVEL
IC4 10VT03
IC5 HA12005
CH-2 PRE AMP
R55
R56
C47
CH-2 AUDIO R/P HEAD
SW-13 H: ON
SW-14 L: ON
R60
C50
C46
R57
C44
C67
Q10
Q11
Q16
R105
C94
CH-2 BIAS LEVEL
IC6 TA7629P
R81
R80
Q15 BUFFER
L2
C64
R85
C73
R90
C72
R84
C76

1 1



Q9
Q20
REG 12V
L: ON: AUDIO DUB
IC7 12VT04
CH-1 MUTING
H: MUTING
TP14
Q7
BUFFER
L1
C24
7629P
B AMP
REC
SW-2
PB
MONITOR OUT
EMITTER FOLLOWER
EK AMP
D AMP
C37
IC2 HA12005
BUFFER
CH-1 REC LEVEL
R109 C95
R108
IC10 AN6551
REC AMP
C99 R116
L8
C100
CH-1 REC EQ
R113
R114
R115
L6
C97
L7 C98
Q18
H: ON 6H MODE
DOLBY CTL ON: L, OFF: H
CH-1 OUT
HIGH
LP MODE
N.C.
1 4 SERVO
12V OUT
GND
3 3 MIXING
CN13
REG 12V IN
GND
UNREG 22V
1 0 REGULATOR
A222V
Q23
D2
C106
R126
L: ON
D3
IC9 9VT04
MODE CTL
H: ON
L: PB
H: REC
SW-6
SW-7
SW-5
12V
L: REC
H: PB
IC8 9VT04
SW-9
SW-10
SW-8
CUE SET IN (1SEC)
REC START IN
MUTE (CH-2) IN
MUTE (CH-1) IN
AUDIO E-E IN
AUDIO DUB IN
LOW
LOW
HIGH
HIGH
HIGH
LOW
1 2 MECHA CON
L: REC, H: PB
IC7 12VT04
CH-2 MUTING
TP24
Q15
BUFFER
L2
C64
629P
SW-4
CH-2 OUT
CH-2 REC LEVEL
R98 C88
R96
IC10 AN6551
C92 R104
L15
C93
IC5 HA12005
C76
CH-2 REC EQ
R101
R103
R102
L3
C90
L4 C91
Q17
H: ON 6H MODE
1 1 AUDIO IN/OUT
IC3 TA7066PBC
IC1
C2
AMP
C9
CH-1 (LEFT) OUT To MIXING CONN. CN11-1
To RELAY MAKE CONTACT
R16
CH-1 (LEFT) OUT To 2 CH AV CONN. CN5-1
R14
H: ON STEREO
C1
H: ON CH-1
L: DOLBY ON
1 4 SERVO
HEADPHONES
OFF
ON
12V DOLBY
H: STEREO MODE
H: CH-2 ONLY
H: CH-1 ONLY
STEREO
CH-2
CH-1
12V
2 6 INPUT SWITCH
12V IN From AUDIO CONN 102
H: ON CH-2
IC2
H: ON STEREO
R15
R18
CH-2 (RIGHT) OUT To 2 CH AV CONN. CN5-3
IC4 TA7066PBC
C10
C17
CH-2 (RIGHT) OUT To MIXING CONN. CN11-3

Audio-Demodulator – Blockdarstellung · Audio demodulator block diagram

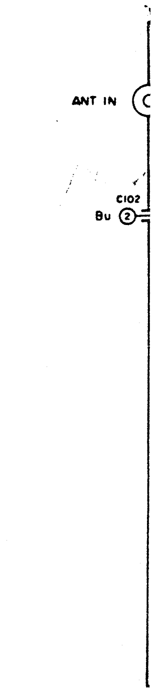

2 4
33.4 38.9 MHz
5.5 5.7 MHz
(S Curve)
5.5MHz
CH - I
15KHz
CH - I
15KHz
2 4 DEMOD
(from TUNER/IF)
IF IN
10dB
AMP
Q801
SAW
FILTER
MATCHING
TRANS
T801
MATCHING TRANS ADJ
IC 801 LA7506
IF AMP
LLD
VIDEO
AMP
LLD
TUNING
T802
LLD ADJ
TP803
5.5MHz
BPF
CF801,802
IC802 UPC1391H
IF
LIMITER
LPF
DET
TUNING
CF803,C813
TP804
DE-EMPHA
R811, C816
TP819
MUTE 2
NO SYNC:H
(from CONN. 32)
R815
CH-1 LEVEL ADJ
L+R
ADD
L-R
BUFFER
2R
IC804
UPC4558C
SUB(2R)
ST
DL
D803,804
R836
SEPARATION ADJ
STEREO:H
DOUBLE:H
MAIN (L+R)
SUB (L-R)
IC805 LA7751
DUAL/STEREO
SWITCHER MATRIX
COMPA
-RATOR
SWITCH
LED
DRIVE
TP 818
TP 817
L LEVEL ADJ
R853
R LEVEL ADJ
R852
MUTE CONTROL
IC808 TA7324P
TRIGGER
AMP
DISCHARGE
LEVEL DET
DISCHARGE
CHARGE
LEVEL DET
(from T/IF BOARD,06-50)
NO SYNC:H
32 MUTE 2 IN
31 12V IN
CH CHANGE,
SKIP:H
33 MUTE 1 IN
41 CH-1 (L) OUT
(to AUDIO IN/OUT, 11-80)
43 CH-2 (R) OUT
BUFFER
Q803,804
INV.
Q802
21
22
61
62
10V
DL
ST
0 8 DISPLAY
11
12
12V OUT
13
191
192
193
MAIN
MAIN,SUB
SUB
SW-4
1 4 SERVO
TP821
5.7 MHz
BPF
CF804,805
IF
LIMITER
LPF
DET
IC803 UPC1391H
TUNING
CF806,C820
TP805
DE-EMPHA
R822,C823
R823
CH-2 DE-EMPHASIS ADJ
R838
PILOT CARR.
LEVEL ADJ-2
IC805 LA7751
BUFFER
54.7KHz
TUNING
T803
PILOT CARR.
LEVEL ADJ-1
PILOT
DET
PILOT
TANK
T804
PILOT TANK ADJ
TP813
117.5Hz(ST)
BPF
274.1Hz(DL)
BPF
IC806
PU52779
RECTIFIER
CIRCUIT
D805,806
C846,R842
RECTIFIER
CIRCUIT
D807,808
C847,R844
REFERENCE
INPUT
COMPA
-RATOR
COMPA
-RATOR
IC 807
UPC358C
(S Curve)
5.7MHz
CH-2
15KHz 54.7KHz (3.5fh)
CH - 2
15KHz
PILOT SIGNAL
54.7KHz (3.5fh)
PILOT TONE
0/117.5/274.1 Hz

TP / MODE	CONN41	CONN43	CONN11	CONN12
M / M	M	M	L	L
M / S	M	S	L	H
S / S	S	M	H	H

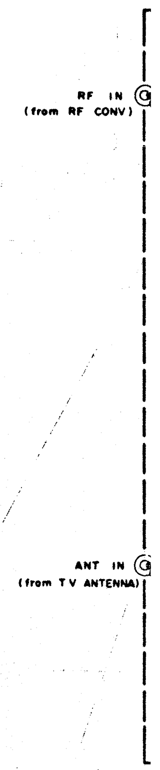
M --- MAIN CH OUT

S --- SUB CH OUT

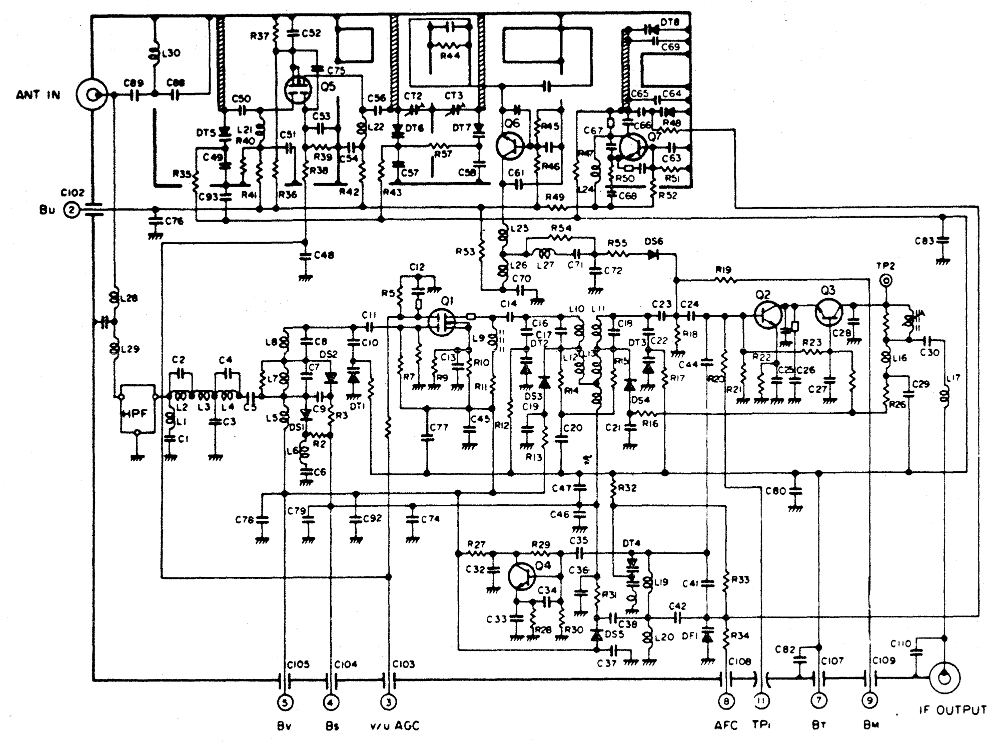
VHF/


ANT IN
C102
Bu ②

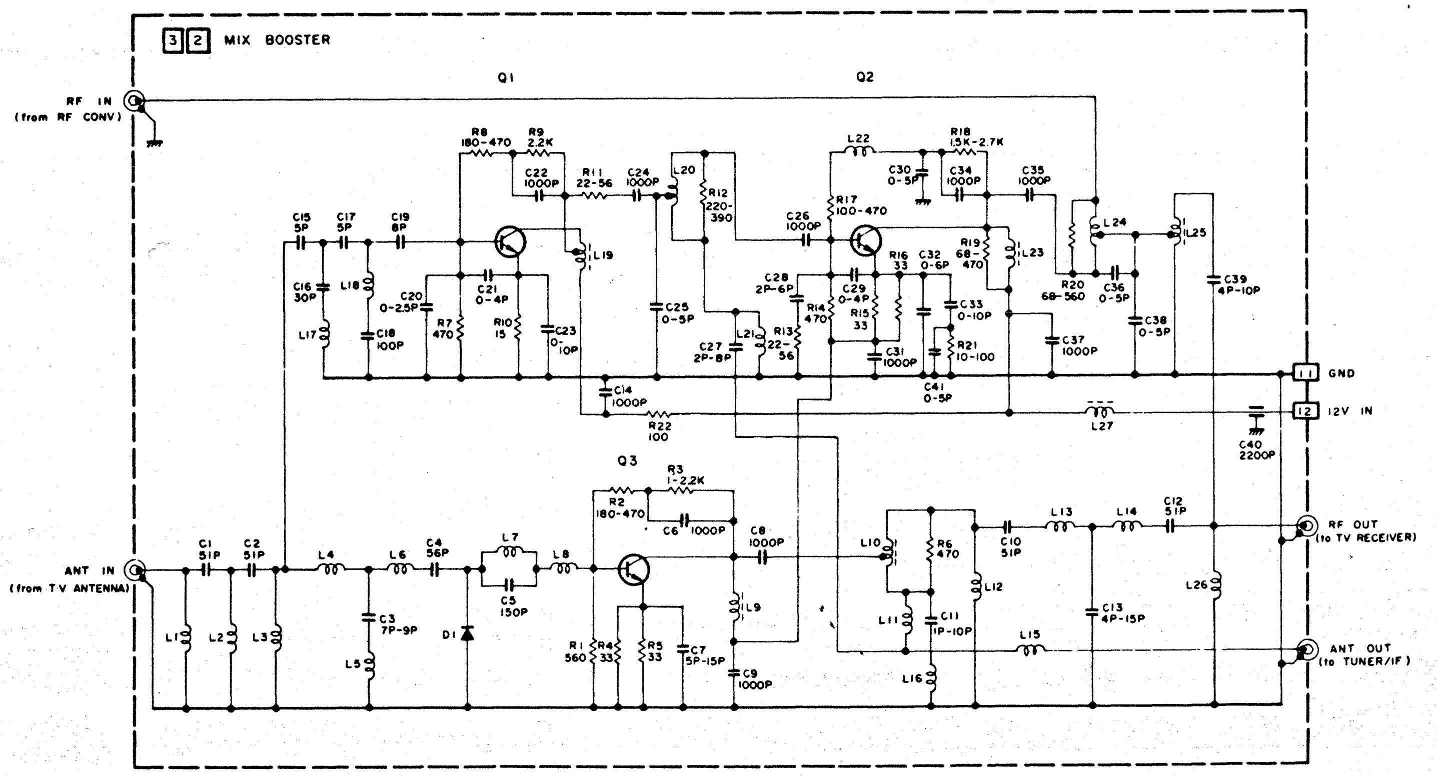
Ante


RF IN
(from RF CONV)
ANT IN
(from TV ANTENNA)

VHF/UHF Tuner Schaltbild · V/U Tuner schematic diagram

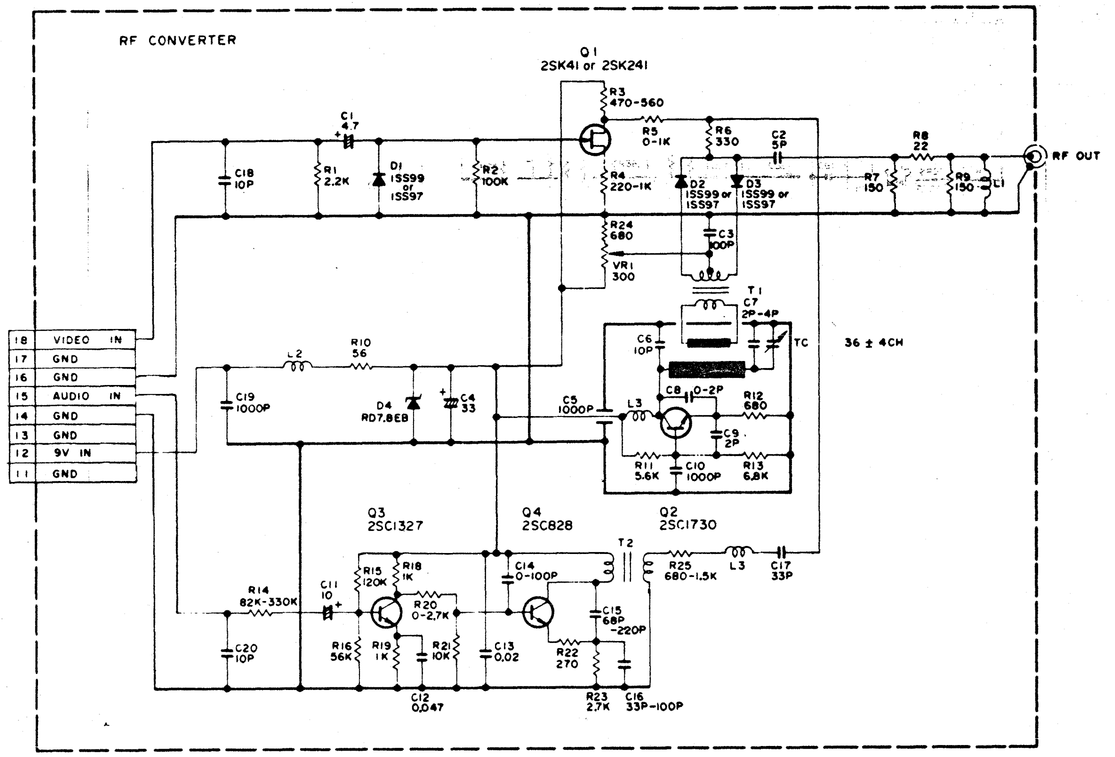

ANT IN
Bu
HPF
Q1
Q2
Q3
Q4
Q5
Q6
Q7
TP2
Bv
Bs
v/u AGC
AFC
TP1
BT
BM
IF OUTPUT

Antennenverstärker · Mix booster


3 2 MIX BOOSTER
RF IN (from RF CONV)
Q1
Q2
Q3
GND
12V IN
RF OUT (to TV RECEIVER)
ANT IN (from TV ANTENNA)
ANT OUT (to TUNER/IF)

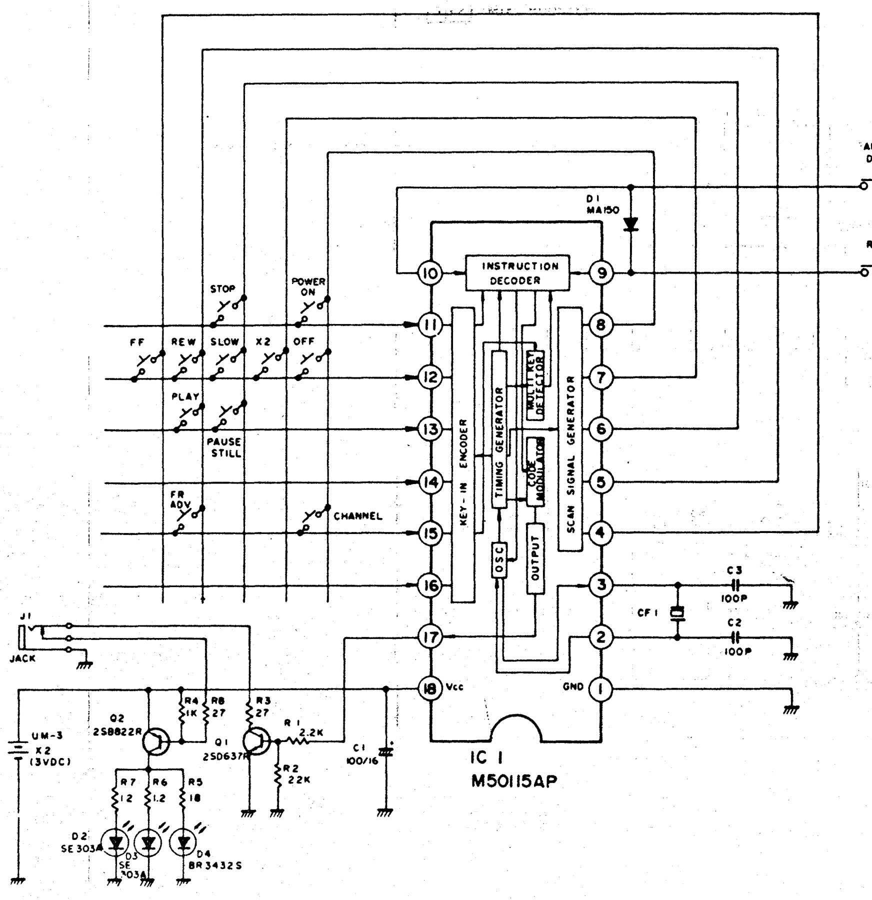
NOTES : Unless otherwise specified ;
1 All transistors are 2SC2570A.
2 All diodes are 1S2076 or 1S2473.
3 All resistance values are in ohms.

HF Konverter · RF Converter


RF CONVERTER
Q1 2SK41 or 2SK241
RF OUT
18 VIDEO IN
17 GND
16 GND
15 AUDIO IN
14 GND
13 GND
12 9V IN
11 GND
36 ± 4CH
Q3 2SC1327
Q4 2SC828
Q2 2SC1730

NOTES : Unless otherwise specified ;
1. All resistance values are in ohms.
2 All capacitance values are in μF.

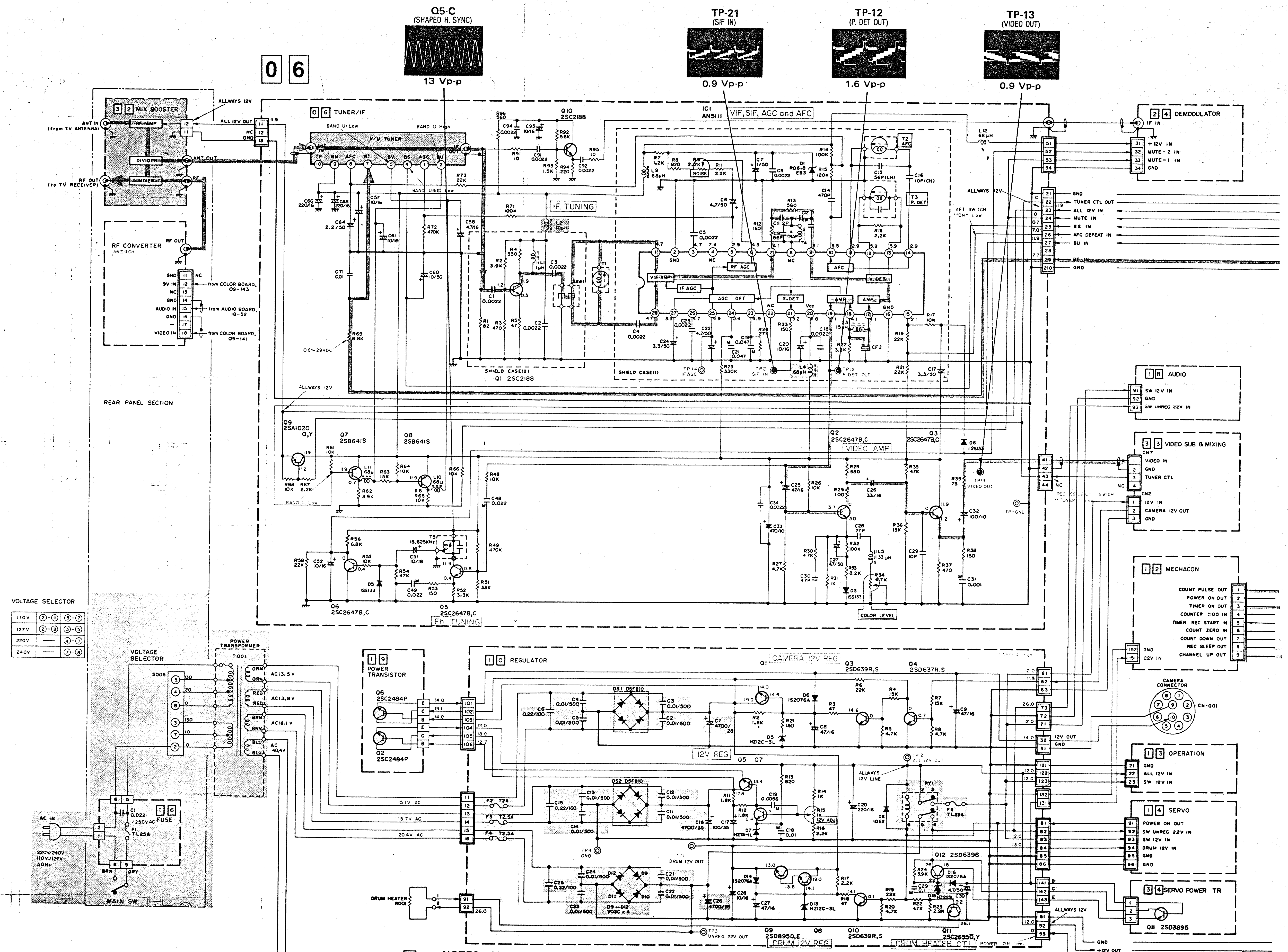
Drahtlose Fernbedienung · Wireless remote control unit


AUDIO DUB
REC
D1 MA150
INSTRUCTION DECODER
KEY-IN ENCODER
TIMING GENERATOR
MULTI-KEY DETECTOR
CODE MODULATOR
SCAN SIGNAL GENERATOR
OSC
OUTPUT
STOP
POWER ON
FF
REW
SLOW
X2
OFF
PLAY
PAUSE STILL
FR ADV
CHANNEL
J1 JACK
UM-3 X2 (3VDC)
Q2 2SB822R
Q1 2SD637R
D2 SE303A
D3 SE303A
D4 BR3432S
IC 1 M50115AP
Vcc
GND

NOTES: Unless otherwise specified;
1, All resistance values are in ohms, 1/4 W.
2, All capacitance values are in μF.

Tuner/ZF Schaltung 16 Programme (Kabel-Tuner-Version)
Tuner/IF circuit 16 programs (Cable tuner version)

0 6



Q5-C
(SHAPED H. SYNC)
13 Vp-p
TP-21
(SIF IN)
0.9 Vp-p
TP-12
(P. DET OUT)
1.6 Vp-p
TP-13
(VIDEO OUT)
0.9 Vp-p
0 6
3 2 MIX BOOSTER
RF AMP
DIVIDER
MIXER
ANT IN (From TV ANTENNA)
RF OUT (to TV RECEIVER)
ANT OUT
RF IN
ALLWAYS 12V
ALL 12V OUT
RF CONVERTER
REAR PANEL SECTION
0 6 TUNER/IF
V/U TUNER
BAND U-Low
BAND U-High
IC1 AN5111
VIF, SIF, AGC and AFC
IF. TUNING
SHIELD CASE(2)
Q1 2SC2188
SHIELD CASE(1)
Q10 2SC2188
Q9 2SA1020 O,Y
Q7 2SB641S
Q8 2SB641S
Q2 2SC2647B,C
Q3 2SC2647B,C
VIDEO AMP
Q6 2SC2647B,C
Q5 2SC2647B,C
Fh TUNING
COLOR LEVEL
2 4 DEMODULATOR
1 8 AUDIO
3 3 VIDEO SUB & MIXING
1 2 MECHACON
CAMERA CONNECTOR
CN-001
1 3 OPERATION
1 4 SERVO
3 4 SERVO POWER TR
Q11 2SD3895
VOLTAGE SELECTOR
110V
127V
220V
240V
POWER TRANSFORMER
T001
1 9 POWER TRANSISTOR
Q6 2SC2484P
Q2 2SC2484P
1 0 REGULATOR
CAMERA 12V REG
12V REG
DRUM 12V REG
DRUM HEATER CTL
1 6 FUSE
AC IN
220V/240V 110V/127V 50Hz
MAIN SW
DRUM HEATER R001
to T/T SUB 112
to T/T SUB 111

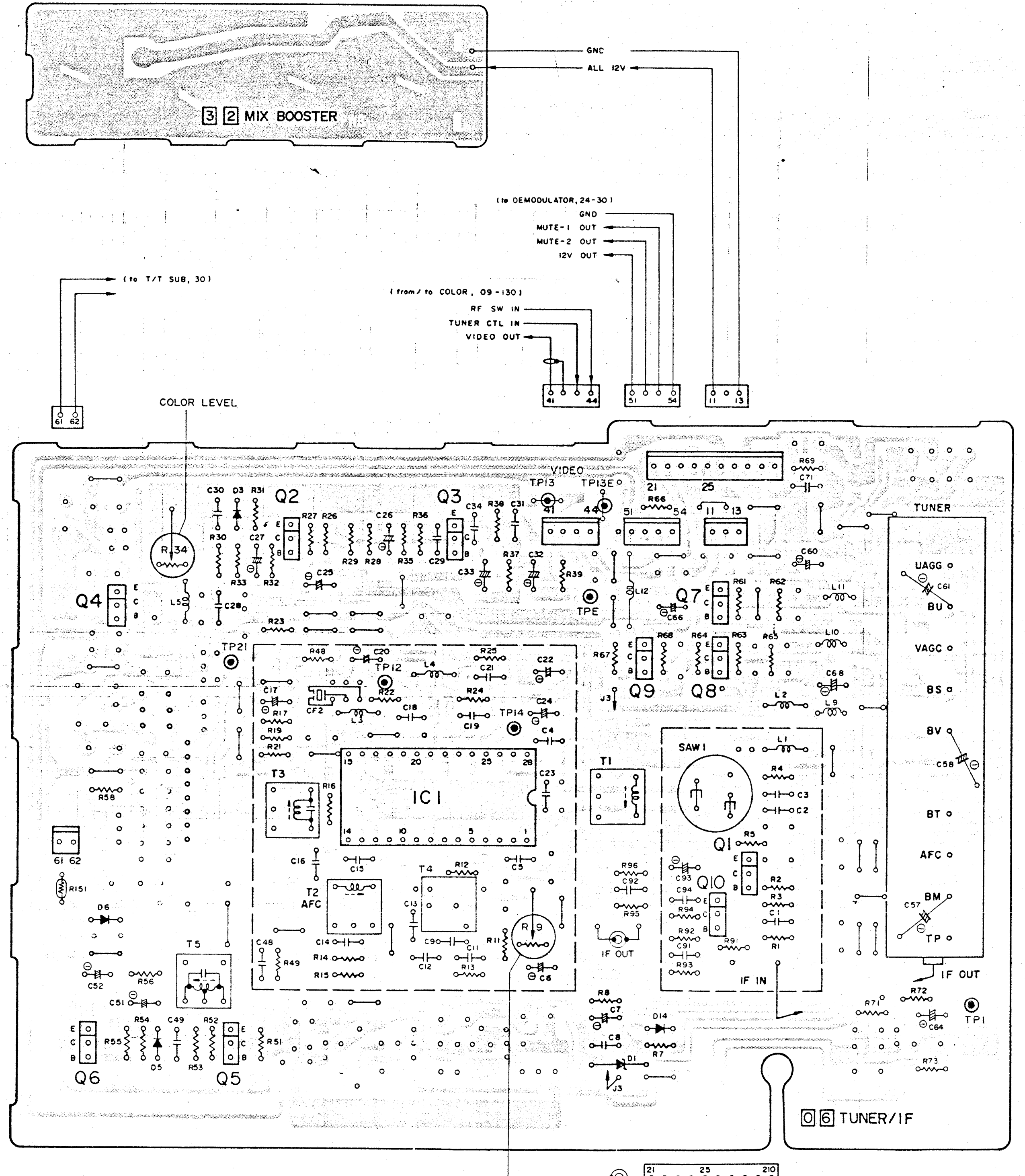
NOTES: Unless otherwise specified;
1. NPN type transistors are 2SD637S.
2. Diodes are 1SS133.
3. All resistance values are in ohms, 1/8 W. (Tuner/IF board : 1/6 W)
4. All capacitance values are in μF.
5. All inductance values are in H.

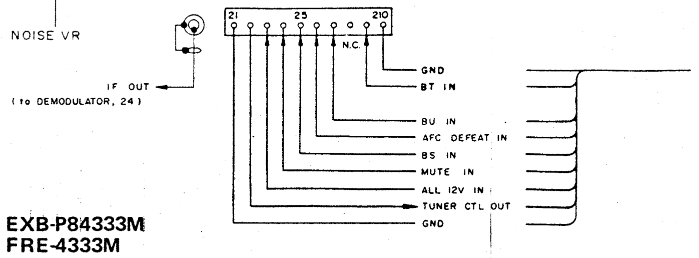
- ; Electrolytic
- ; Mylar
- ; Ceramic

NOTES: 1. Voltages are DC-measured with a digital voltmeter during recording mode.
2. Where voltage differs between recording and playback, the voltage during playback modes is shown in parentheses.

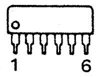
Tuner/ZF-Platte (Kabel-Tuner-Version)
Tuner/IF circuit board (Cable tuner version)

0 6

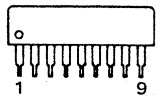

3 2 MIX BOOSTER
GND
ALL 12V
(to DEMODULATOR, 24-30)
GND
MUTE-1 OUT
MUTE-2 OUT
12V OUT
(to T/T SUB, 30)
(from/to COLOR, 09-130)
RF SW IN
TUNER CTL IN
VIDEO OUT
COLOR LEVEL
VIDEO
TP13
TP13E
TUNER
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q1
IC1
T1
T2
T3
T4
T5
SAW1
TP12
TP14
TP21
TPE
TP1
UAGG
BU
VAGC
BS
BV
BT
AFC
BM
TP
IF OUT
IF IN
0 6 TUNER/IF


NOISE VR
IF OUT
(to DEMODULATOR, 24)
N.C.
GND
BT IN
BU IN
AFC DEFEAT IN
BS IN
MUTE IN
ALL 12V IN
TUNER CTL OUT
GND

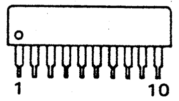
EXB-P85333M
FRE-5333M



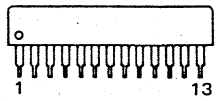
EXB-P88333M



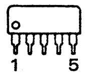
EXB-P89333M
FRE-9333M



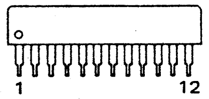
EXB-P812333M
FRE-12333M



EXB-P84333M
FRE-4333M



EXB-P811562M
EXB-P811563M
FRE-11562M



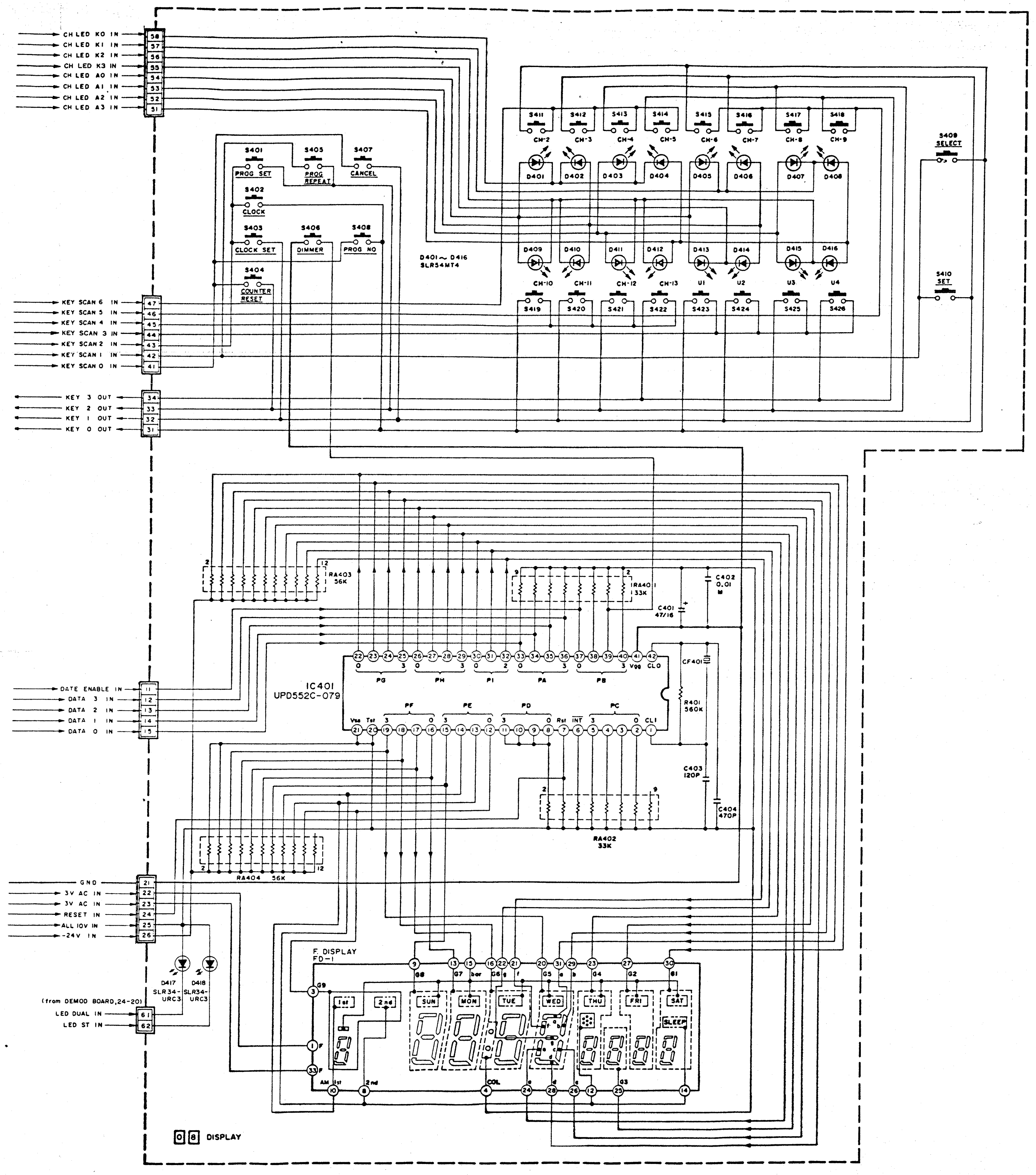
Anzeige-Schaltung 16 Programme (Kabel-Tuner-Version)
Display circuit 16 programs (Cable tuner version)

0 8

Shaded ( ) parts are critical for safety.
Replace only with specified part numbers.

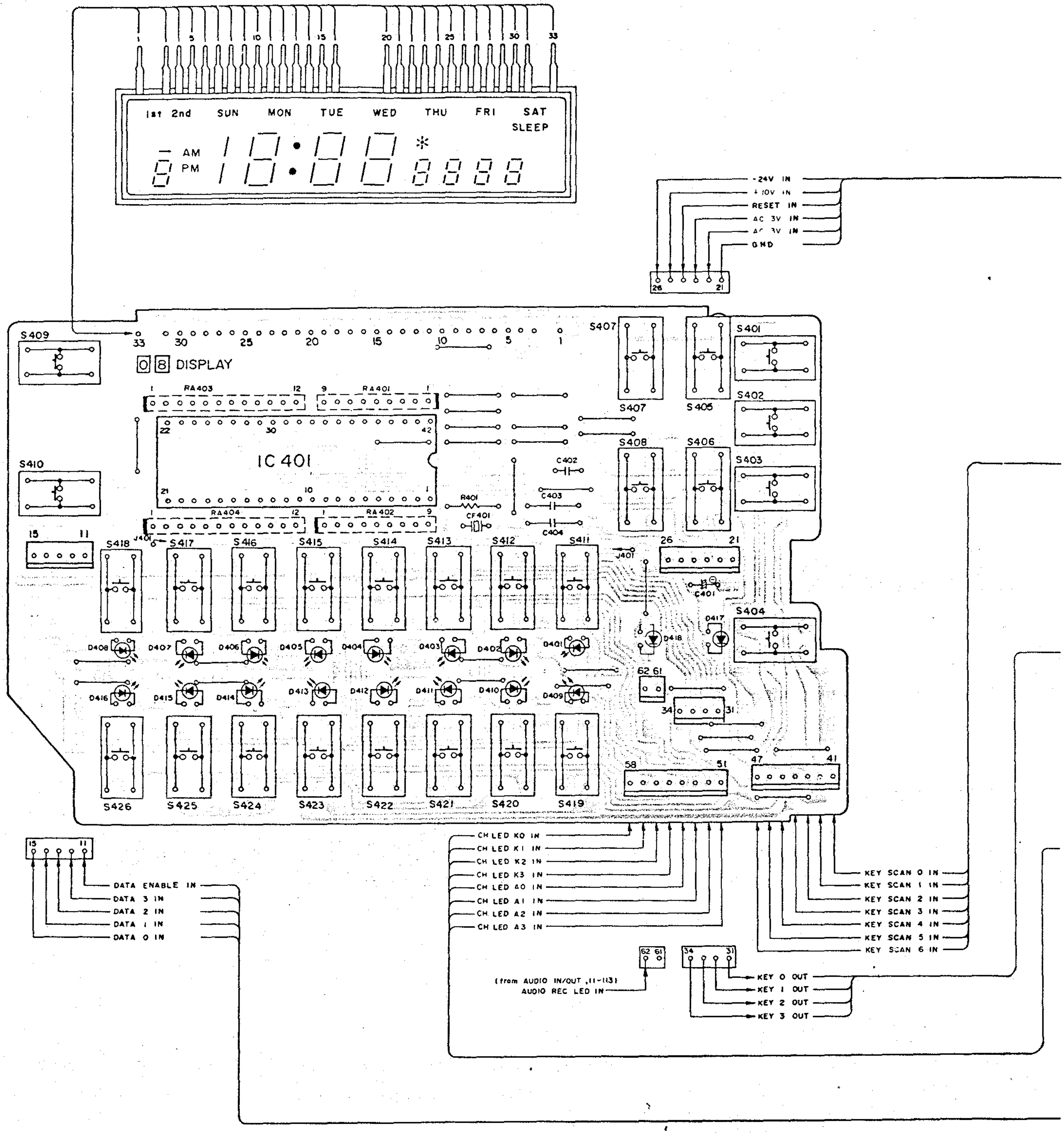
NOTES: Unless otherwise specified;
1. D401—D416 are SLR54MT4.
2. All resistance values are in ohms, 1/8 W.
3. All capacitance values are in μF.

; Electrolytic
; Mylar
; Ceramic

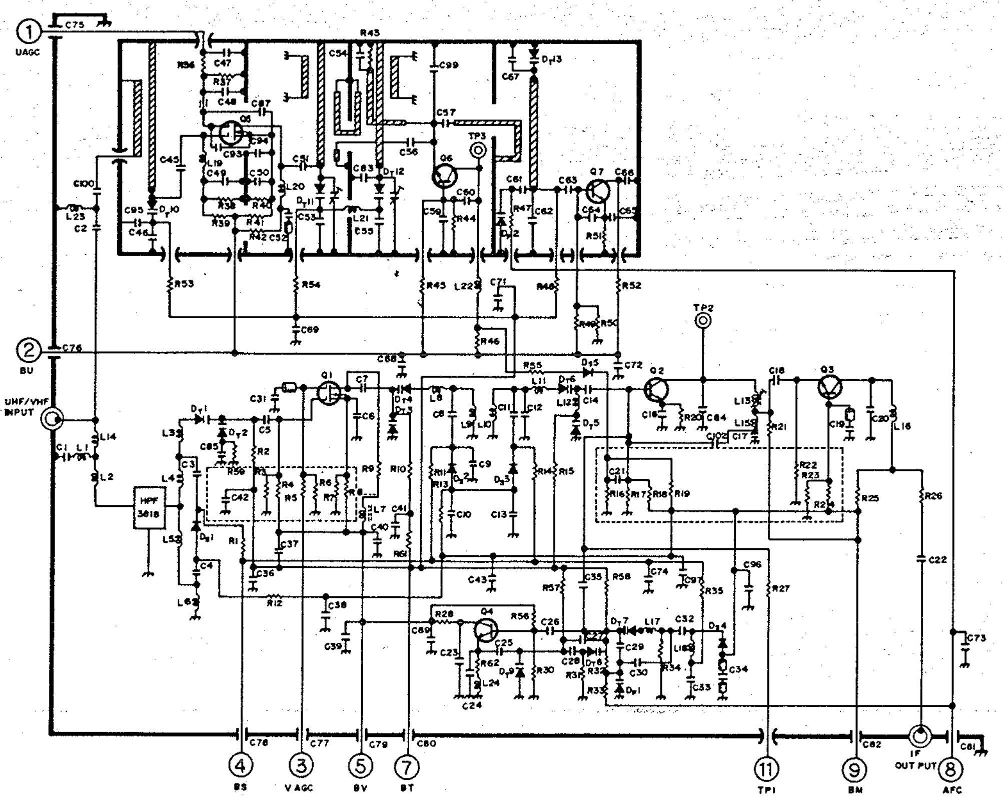

CH LED K0 IN
CH LED K1 IN
CH LED K2 IN
CH LED K3 IN
CH LED A0 IN
CH LED A1 IN
CH LED A2 IN
CH LED A3 IN
S401 PROG SET
S403 PROG REPEAT
S407 CANCEL
S402 CLOCK
S403 CLOCK SET
S406 DIMMER
S408 PROG NO
S404 COUNTER RESET
S409 SELECT
S410 SET
D401~D416 SLR54MT4
KEY SCAN 6 IN
KEY SCAN 5 IN
KEY SCAN 4 IN
KEY SCAN 3 IN
KEY SCAN 2 IN
KEY SCAN 1 IN
KEY SCAN 0 IN
KEY 3 OUT
KEY 2 OUT
KEY 1 OUT
KEY 0 OUT
RA403 56K
RA401 33K
C402 0.01
C401 47/16
IC401
UPD552C-079
CF401
R401 560K
C403 120P
C404 470P
RA402 33K
RA404 56K
DATE ENABLE IN
DATA 3 IN
DATA 2 IN
DATA 1 IN
DATA 0 IN
GND
3V AC IN
3V AC IN
RESET IN
ALL 10V IN
-24V IN
F. DISPLAY FD-1
D417 SLR34-URC3
D418 SLR34-URC3
(from DEMOD BOARD, 24-20)
LED DUAL IN
LED ST IN
SUN
MON
TUE
WED
THU
FRI
SAT
SLEEP
0 8 DISPLAY

Anzeige-Platte 16 Programme (Kabel-Tuner-Version)
Display circuit board 16 programs (Cable tuner version)

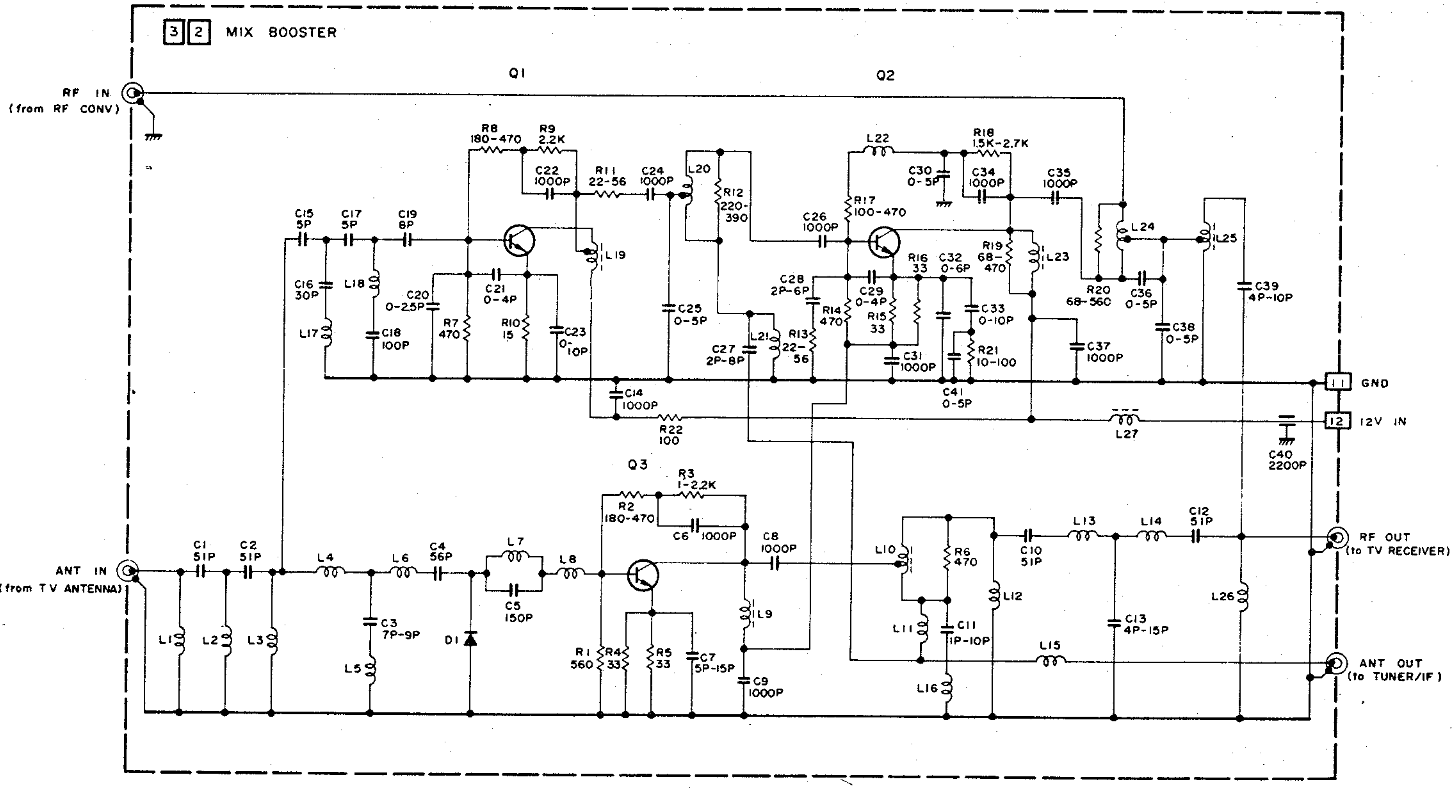
0 8


1st 2nd SUN MON TUE WED THU FRI SAT
SLEEP
AM
PM
0 8 DISPLAY
IC 401
RA403
RA401
RA404
RA402
R401
CF401
C401
C402
C403
C404
J401
S401
S402
S403
S404
S405
S406
S407
S408
S409
S410
S411
S412
S413
S414
S415
S416
S417
S418
S419
S420
S421
S422
S423
S424
S425
S426
D401
D402
D403
D404
D405
D406
D407
D408
D409
D410
D411
D412
D413
D414
D415
D416
D417
D418
-24V IN
+10V IN
RESET IN
AC 3V IN
AC 3V IN
GND
DATA ENABLE IN
DATA 3 IN
DATA 2 IN
DATA 1 IN
DATA 0 IN
CH LED K0 IN
CH LED K1 IN
CH LED K2 IN
CH LED K3 IN
CH LED A0 IN
CH LED A1 IN
CH LED A2 IN
CH LED A3 IN
KEY SCAN 0 IN
KEY SCAN 1 IN
KEY SCAN 2 IN
KEY SCAN 3 IN
KEY SCAN 4 IN
KEY SCAN 5 IN
KEY SCAN 6 IN
(from AUDIO IN/OUT ,11-113)
AUDIO REC LED IN
KEY 0 OUT
KEY 1 OUT
KEY 2 OUT
KEY 3 OUT

VHF/UHF Tuner Schaltung (Kabel-Tuner-Version)
V/U Tuner circuit (Cable tuner version)


① UAGC
② BU
UHF/VHF INPUT
HPF 3618
TP2
TP3
④ BS
③ VAGC
⑤ BV
⑦ BT
⑪ TP1
⑨ BM
IF OUT PUT
⑧ AFC

Antennenverstärker (Kabel-Tuner-Version)
Mix booster (Cable tuner version)


3 2 MIX BOOSTER
RF IN (from RF CONV)
ANT IN (from TV ANTENNA)
Q1
Q2
Q3
R8 180-470
R9 2.2K
R11 22-56
C22 1000P
C24 1000P
R12 220-390
R17 100-470
R18 1.5K-2.7K
C30 0-5P
C34 1000P
C35 1000P
C26 1000P
C15 5P
C17 5P
C19 8P
C16 30P
C18 100P
C20 0-2.5P
C21 0-4P
R7 470
R10 15
C23 0-10P
C25 0-5P
C27 2P-8P
C28 2P-6P
R14 470
R13 22-56
C29 0-4P
R15 33
R16 33
C32 0-6P
R19 68-470
C33 0-10P
R21 10-100
C31 1000P
C41 0-5P
R20 68-560
C36 0-5P
C37 1000P
C38 0-5P
C39 4P-10P
C14 1000P
R22 100
L27
C40 2200P
GND
12V IN
R3 1-2.2K
R2 180-470
C6 1000P
C8 1000P
C1 51P
C2 51P
C4 56P
C3 7P-9P
C5 150P
R1 560
R4 33
R5 33
C7 5P-15P
C9 1000P
R6 470
C10 51P
C11 1P-10P
C12 51P
C13 4P-15P
RF OUT (to TV RECEIVER)
ANT OUT (to TUNER/IF)

NOTES : Unless otherwise specified ;
1 All transistors are 2SC2570A.
2 All diodes are 1S2076 or 1S2473.
3. All resistance values are in ohms.

Schaltungsbeschreibung

Kurzbeschreibung

Der Videorecorder besitzt gegenüber dem Vorgängermodell mit seinen zahlreichen Besonderheiten noch zusätzlich die Möglichkeit der 8-Stunden-Aufzeichnungsdauer (E-240 Kassette). Hierzu sind einige technische Neuerungen notwendig. Die Aufnahmespieldauer wird mit dem Aufnahmewahlschalter eingestellt. Bei Wiedergabe schaltet der Recorder automatisch in die bei der Aufnahme festgelegte Bandgeschwindigkeit um. Dazu wird der CTL-Impuls an Pin 6 des IC 6 auf der Servo-Platte abgefragt. Der CTL-Impuls wird während der Aufnahme auf die Kontrollspur mit aufgezeichnet.

Er dient bei Wiedergabe zur Einregelung des Capstanmotors, um eine konstante (relative) Bandgeschwindigkeit zu erreichen. Wird die Aufnahmegeschwindigkeit halbiert, ändert sich auch der zeitliche Verlauf dieser aufgezeichneten CTL-Impulse und dies stellt bei der Wiedergabe ein Maß zur automatischen Umschaltung von Standardplay SP (N = Normale Spieldauer) auf Longplay LP (L = Langspielbetrieb) dar.

Im LP-Betrieb liegt Pin 26 des IC 6 auf High. Dieses High geht an Pin 3 des Ic 15 und verursacht an Pin 14 ein Low. Somit bildet R 31 und R 33 einen Spannungsteiler der die Ansteuerspannung halbiert und den Capstan mit der halben Normalgeschwindigkeit rotieren läßt.

Ein weiteres Kriterium ist der Wechsel von Kopfpaar A auf Kopfpaar B.

Hierzu dient folgende kurze Erläuterung:

Die Videokopfscheibe ist mit zwei Videokopfpaaren ausgerüstet. Paar A für Aufnahme und Wiedergabe bei normaler Bandgeschwindigkeit (2,24 cm/sec.). Paar B für Aufnahme und Wiedergabe bei halber Bandgeschwindigkeit (1,17 cm/sec.).

Videokopf A1 hat eine Höhe von 65 μm bezogen auf die Spurbreite von 49 μm. Videokopf A2 hat eine Höhe von 85 μm.

Videokopfpaar B1 und B2 haben eine Höhe von 27 μm und die aufgezeichnete Spurbreite beträgt 24,5 μm (siehe Abb. 3 – 1).

Ciruit description

Brief description

In addition to the features of its predecessor, this viceo recorder also provides for a max. recording time of up to 8 hours (E-240 cassette). This necessitated technical changes. The recording time is selected with the REC mode selector switch. On playback, the recorder switches automatically to the tape speed selected for recording. to that end, the CTL pulse on pin 6 of IC 6 on the Servo board is inquired.

The CTL pulse is recorded on the control signal track when the equipment is in the recording mode. It is used for controlling the capstan motor in the Play mode to ensure a constant relative tape speed.

If the recording tape speed is reduced by half, the time base of the CTL pulses changes accordingly, thus providing a suitable criteria for automatic switchover from standard to longplay in the play mode.

In the LP mode, pin 26 of IC 6 is HIGH. This high is applied to pin 3 of IC 15 and causes pin 14 to go LOW. As a result, R 31 and R 33 form a voltage divider which cuts the driving signal in half, and the capstan therefore rotates at half the standard speed.

Another criteria is set by the change from head pair A to head pair B. This is explained briefly as follows:

The video head disk features two pairs of video heads.

Pair A is used for recording and play in standard speed (2.34 cm/s); pair B for recording and play at half standard speed (1.17 cm/s).

The height of video head A1 is 65 μm (with reference to the track width of 49 μm), while video head A2 has a height of 85 μm.

The heads B1 and B2 have a height of 27 μm, while the recorded track width equals 24.5 μm (see Fig. 3-1).

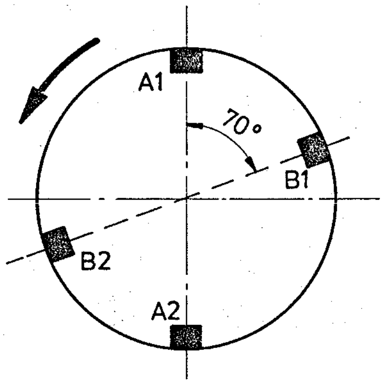


Abb./*Fig. 3-1*

Bei der automatischen Umschaltung von SP- auf LP-Betrieb sollte der Vorgang möglichst ohne große Bild-Ton-Regelstörungen ablaufen. Um dies zu gewährleisten, hat man die Kopfpaare nicht im 90-Grad-Winkel zueinander angeordnet, sondern im 70-Grad-Winkel. Dadurch wird es auch notwendig den Kopfumschaltimpuls an Pin 7 des IC 7 um 70 Grad im LP-Betrieb zu verzögern, damit die Phasenlage der geänderten Kopfpaaranordnung angepaßt wird.

Des weiteren schaltet der High-Pegel der LP-Information auf der Kopfvorverstärkerplatte den Frequenzgang der entsprechenden Köpfe um. Hierzu wird über Anschluß 3 der Pre-Amp-Platte der High-Pegel der LP-Betriebsart an die Basis der beiden Schalttransistoren Q6 und Q7 gelegt, die dann C9, R16 und C12, R18 als Frequenzgang bestimmende Glieder den Köpfen hinzuschaltet. Transistor Q12 schaltet im LP-Betrieb die entsprechenden Köpfe über die Relaiskontakte um.

Automatic switchover from SP to LP operation has to take place without larger picture/sound control interference. To ensure this, the head pairs are mounted at 70° angles with respect to each other, instead of the usual 90° angle. This necessitates also that the head switching pulse on pin 7 of IC 7 be delayed by 70° at LP operation to match the phase position to the changed head pair arrangement.

Furthermore, the high-level LP signal applied to the heads preamplifier board automatically switches the frequency response of the corresponding video heads. For that reason, the HIGH state in the LP mode is applied to the base circuit of the switching transistors Q 6 and Q 7 via pin 3 of the PRE AMP board, thereby connecting the frequency determining components C9, R16 and C12, R18 to the heads.

Switchover to the corresponding heads for the LP mode is effected by means of Q 12 via relay contacts.

Im Audioteil wird über Anschluß 81 der Frequenzgang des Audiosignales im LP-Betrieb geändert. Hierfür schaltet man die Transistoren Q18 und Q17, die mit ihren am Kollektor angeschlossenen frequenzbestimmenden Bauteilen den Frequenzgang der Operationsverstärker im IC 10 ändern, durch. Dasselbe geschieht mit Q2 und Q10, die ihrerseits den Frequenzgang der Operationsverstärker im IC 2 und IC 5 ändern. Im Normalaufzeichnungsverfahren wird Spur an Spur ohne Rasen aufgezeichnet. Der Aufzeichnungsrythmus der Zeilen ist konstant und damit ändert sich auch nicht das Hor.-Synch.-Signal (siehe Abb. 3-2). Zeichnet man nun mit der halben Wiedergabegeschwindigkeit auf, ändert sich zunächst einmal die Spurbreite wie auch die Zeilenlänge.

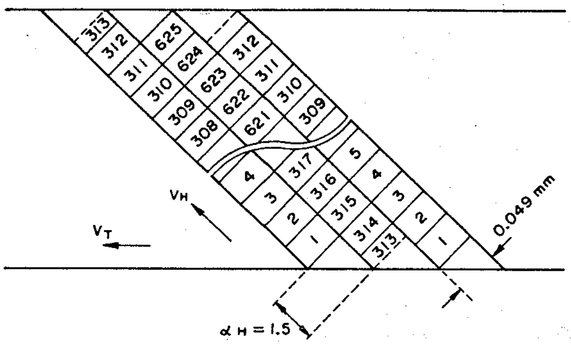


Abb./*Fig. 3-2*
Spurverlauf bei Aufnahme im SP-Betrieb
Recorded signal pattern of SP mode

Die Zeilen benachbarter Spuren liegen nun nicht mehr nebeneinander, sondern sie sind versetzt wie Abb. 3-3 zeigt, angeordnet. Bei der Wiedergabe im LP-Betrieb macht sich der Fehler nicht sonderlich bemerkbar. Da man aber auch im LP-Wiedergabebetrieb die Sonderfunktionen Standbild, sichtbarer Vorlauf-Rücklauf durchführen kann, muß der Fehler korrigiert werden. In den Sonderfunktionen ändert sich der Spurwinkel. D. h. man tastet die vorher aufgezeichnete Spur nicht mehr tatsächlich genau ab, sondern man tastet auch Teile benachbarter Spuren und deren Farbübersprechkomponenten mit ab. Dies verdeutlicht Bild 3-4. Die hier eingezeichnete Spur ist im Suchlaufbetrieb vorwärts zu sehen. Überträgt man nun die Teile des Übersprechens nach A1, erkennt man deutlich die Disharmonie der Zeilen. A, C, F, K und N sind in ihrer Zeilenlänge verkürzt, d. h. bei Nichtkorrektur gibt es Zeilensynchronstörungen, bei den Sonderfunktionen im LP-Betrieb. Grundsätzlich müssen aus den verkürzten Zeilen wieder die ursprünglichen Zeilen herbeigeführt werden. Abb. 3-4 verdeutlicht am Beispiel des Abschnittes A4-A7 das Prinzip. Ist der 1H-Jump-Impuls auf Low, werden die Zeilen des Abschnittes A5 (Zeile A) nach A7 übertragen. Ist er auf High, werden die Zeilen aus Abschnitt A4 (Zeile B) nach A7 übertragen. Diese Korrekturschaltungsvariante befindet sich mit Impulsangaben im Farbsignal-Blockschaltbild. Bei eventuell auftretenden Störungen mit Zeilenausreissern oder Farbaussetzern im LP-Betrieb bei Sonderfunktionen ist es ratsam, den Korrektur-Schaltungsblock, bestehend aus IC 303, IC 305, IC 306, IC 308 und IC 309 an Hand der Impulsangaben zu überprüfen. Dabei sei bemerkt, daß sich der 0,5H- und der 1H-Jump-Impuls in ihrer Phasenlage bzw. Impulsbreite dauernd ändern.

In the audio section, the frequency response of the audio signal is altered via connector 81 for the LP mode. To that end, transistors Q 18 and Q 17 are switched conducting and the frequency determining components in the collector circuit of these transistors then alter the frequency response of the operations amplifier in IC 10. Q 2 and Q 10 function in the same way, altering the frequency response of the operations amplifiers in IC 2 and IC 5.
On standard recording, the information is recorded track-on-track. The recording rhythm for the lines remains constant and hence, the hor. sync signal does not change (Fig. 3-2).

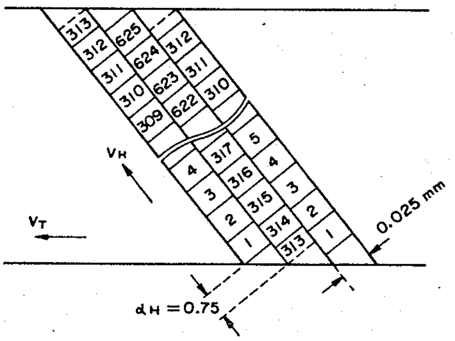


Abb./*Fig. 3-3*
Spurverlauf bei Aufnahme im LP-Betrieb
Recorded signal pattern of LP mode

When recording at half the playback speed both, track width and line length will change as a result. The lines of adjacent tracks are now no longer opposite each other but are displaced as shown in Fig. 3-3. This error, however, is hardly noticeable in the Play mode. Nevertheless, since the LP play mode also enables the special functions still picture, visible forward wind and rewind, the error must be corrected. In the special function modes, the tracking angle is changed, that is to say, scanning is not limited precisely to the previous recorded track but also includes parts of adjacent tracks and their colour crosstalk components. This is illustrated by Fig. 3-4.
The Fig. shows the track with the equipment operating in the icture search forward mode. By transferring the crosstalk parts to A1, the disharmony of the lines becomes clearly apparent.
Lines A, C, F, K and N are shortened in length, which would lead to interference in the hor. sync signal upon selection of any of the above special functions in the LP mode if the error were left uncorrected. It is therefore absolutely necessary that the original lines are derived again from the shortened lines. Section A4-A7 of Fig. 3-4 illustrates the principle.
If the 1H jump pulse coincides with LOW, the lines of section A5 (line A) are transferred to A 7. If the pulse arrives on HIGH, the lines of section A 4 (line B) are transferred to A 7. This compensating circuit version, together with the pulse data is shown in the colour signal block diagram.
If interference is noted in the LP mode in the form of fringed lines or loss of colour upon selection of one of the above special modes, it is advisable to check the compensating circuit (IC 303, IC 305, C 306, IC 308 and IC 309) by referring to the pulse data. It should be noted here, that the 0.5 H and the 1 H jump pulses continuously change in phase position and pulse width.